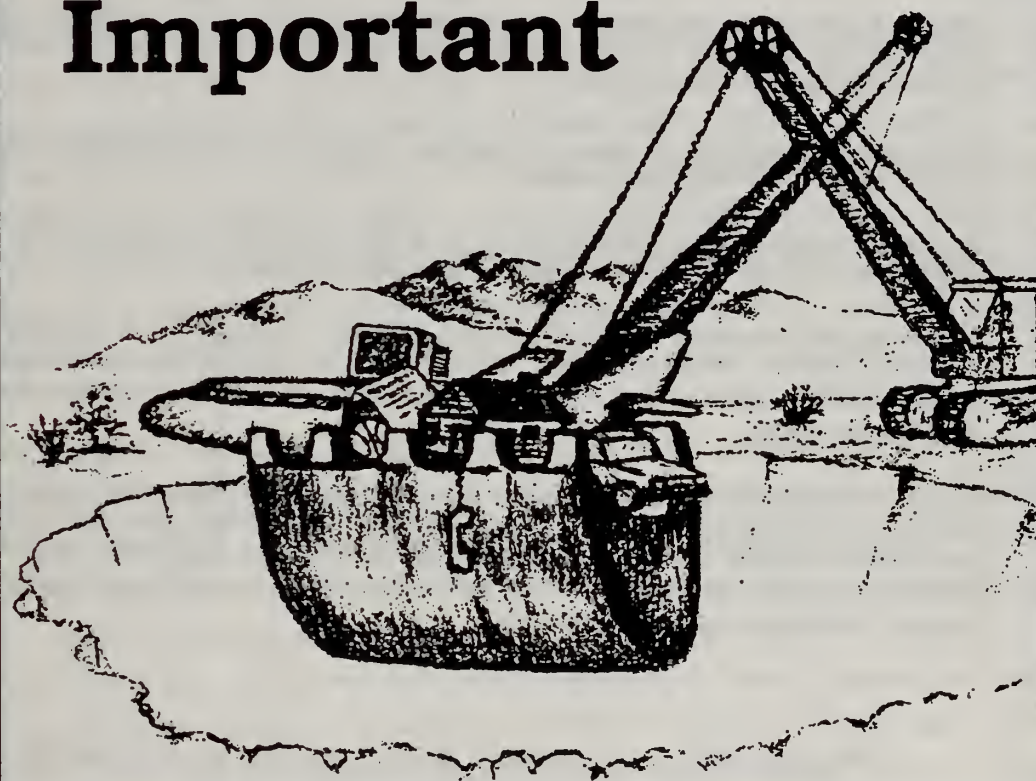


THE CALIFORNIA DESERT

Why Mining is Important



Division of Mineral Resources
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BLM-CA-PT-91-013-3091

INTRODUCTION

The Bureau of Land Management (BLM) has completed its studies of the lands within the state of California that are being considered for wilderness designation. In addition, the Bureau of Mines (BOM) and the United States Geological Survey (USGS) have completed their investigations of mineral potential for those areas recommended for wilderness designation by BLM. The Secretary of Interior will soon make recommendations regarding wilderness designation of each Wilderness Study Area (WSA). The President will then introduce appropriate legislation to Congress.

The wilderness study process designed by Congress in the Federal Land Policy and Management Act of 1976 (FLPMA) intended that mineral resource values be carefully weighed and not unjustly withdrawn from development by inclusion in wilderness areas. FLPMA mandated the Secretary of Interior (through BLM) to Inventory and Identify all resource values and make recommendations regarding the suitability of studied areas for wilderness designation. To ensure that Important mineral resources were not withdrawn without proper consideration, the law also required the USGS and BOM to conduct additional mineral inventories and studies on all areas found suitable by BLM for wilderness designation. Mineral inventories were not conducted by BOM or USGS for areas recommended unsuitable for wilderness designation by BLM.

It is clear that Congress intended mineral resources to be a major consideration in the determination of wilderness areas. FLPMA states specifically in its Declaration of Policy that "... the public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals, food, timber, and fiber from the public lands including implementation of the Mining and Minerals Policy Act of 1970 ... ". As the wilderness study process has approached its conclusion, legislation has been proposed which did not take into account BLM recommendations and sought to designate most WSAs of the California Desert Conservation Area (CDCA) as wilderness areas or national parks. Arguments used in support of that proposed legislation questioned the rationale of BLM studies, including the evaluation of mineral resources, for those areas recommended unsuitable for wilderness designation.

The purpose of this paper is to provide facts regarding the minerals of the California Desert and to inform the American public of the role that mineral resources play in their lives. This paper represents a mineral resource perspective intended to supplement the voluminous reports and other documents that will be presented to Congress.

MINERAL DEPOSITS

Many geological processes have operated throughout geologic time to form the earth as we know it. Some of these processes have resulted in the generation of mineral deposits at various places within

the earth's crust. A mineral deposit is a concentration of minerals or elements of economic significance, in sufficient concentrations and quantities to warrant extraction at reasonable cost.

Geologists have spent decades studying mineral deposits, attempting to determine and understand the processes that formed them. The details of a particular type of mineral deposit are of importance to the professional geologist because a mineral deposit model is used to guide technical exploration efforts. Certain aspects of these models are important to this discussion because these considerations, though taken for granted by the professional geologist, are sometimes unknown or overlooked by others. They are:

- The actual time required for a mineral deposit to form is an eternity by man's comprehension of time. Even geologists have difficulty imagining the period of time needed for geologic processes to form a mineral deposit but accept the concept because they have been trained to think in such abstract terms as *millions of years*. A million years is nearly fourteen thousand lifetimes but a mineral deposit may take several million years to form.
- All minerals are not stable and do not form under the same conditions and not all mineralizing processes have acted uniformly. This means: only a few minerals are contained in any one deposit; deposits of the same type may differ dramatically from one to another; and they are rare in their occurrence. Simply stated, and as an example, a gold deposit usually will not contain more than one or two other elements that can be recovered as byproducts. Not all gold deposits are alike. And, gold deposits do not occur everywhere. Other types of deposits share these traits. The USGS recently published a compilation of descriptions of eighty-five mineral deposit models grouped into thirteen broad category types (Cox and Singer, eds., 1987, Mineral Deposit Models, USGS Bulletin 1693, 379 p.). This publication attempted to quantify the mineral resource potential of various geologic terrains.
- Different types of mineral deposits form in different ways. Some types of deposits are the result of sedimentary processes and form at, or near, the earth's surface. Some deposits form deep within the earth from igneous activity involving heat, pressure and fluids that exist there. Other geologic forces of faulting, folding, volcanism and erosion may have subsequently buried many mineral deposits that formed at the surface, exposed perhaps only a few of the deposits that formed at depth, and reburied or totally eroded many.
- Mineral deposits are found only where they exist, not where we want them to be found. The geologic processes that formed mineral deposits acted without regard to man's desires, needs or political boundaries. The distribution of mineral resources throughout the world, or across the United States, is not equal.

CONTENTS

INTRODUCTION	1
MINERAL DEPOSITS	1
THE IMPORTANCE OF MINERAL RESOURCES	4
THE MINERAL WEALTH OF THE CALIFORNIA DESERT	5
STRATEGIC AND CRITICAL MATERIALS	10
MINERALS IN THE WILDERNESS STUDY PROCESS	12
MINERALS AND THE ENVIRONMENT	15
THE COST OF MINERAL WITHDRAWAL	16
CONCLUSION	17

TABLES

Table 1. Mineral Commodities That Are Mined, Have Been Mined, Or Have Potential To Be Mined In The California Desert Conservation Area	6
Table 2. Potential Economic Impacts of Access Restrictions Within The East Mojave National Scenic Area as a Result of Pending Legislation	9
Table 3. "Minerals" Designated Strategic and Critical for Certain Commodity Grades	11
FIGURE 1 1989 Net Import Reliance of Selected Nonfuel Materials	13

APPENDICES

I A	Major Uses of the Mineral Commodities of the CDCA	20
B	Importance of Industrial Minerals in Everyday Life	27
II	Mineral Resources, Occurrences and Potentials for WSAs of the CDCA	32
III	Claim Data For Wilderness Study Areas	44
IV	Steps of Action and Costs of Clearing Mining Claims	50
V	Active Mines of Southern California (1988-1989)	52

These concepts are the basis for several "catchy" phrases that have appeared in other discussions and testimony regarding the wilderness issue. Geology is a science that attempts to stretch a little knowledge a long way. The surface of the ground can be seen and studied but inferring what lies beneath the surface is very difficult.

"The absence of evidence is not the evidence of absence," is a phrase that has been used by the mining industry and geological profession to say that just because a mineral resource hasn't been found does not mean that it doesn't exist. Most mineral resources lie below the surface of the ground and therefore cannot be seen, counted or evaluated without the use of somewhat sophisticated exploration techniques. Exploration is a lengthy and expensive undertaking but most exploration efforts do not lead to discovery of ore deposits. Virtually all current exploration is the result of the analysis of many small pieces of geological evidence found at, not below, the surface. Geologists use exposed signs of mineralization to target their exploration efforts, such as, geochemical analyses, geologic maps, previous discoveries, etc. However, undiscovered deposits may exist at the surface, just below the surface or at depth. The only statement that can be made about such unknown deposits is: if the proper geologic environment exists, there is the possibility of a mineral occurrence.

Arguments used to question BLM's evaluation of mineral resource values have implied extremes of conflicting concepts. "Most significant mineralization is found only in the vicinity of known deposits which have been excluded from proposed wilderness or park areas" is an inference that might appear true to a layman simply because that is the current limit of mining activities. It is incorrect to imply that because a mineral deposit has not been found, it does not exist. It is also incorrect to state that all known mineral resources have been excluded from proposed wilderness or park areas. The other extreme, "that left open for exploration, the western United States will be pock-marked by open pit mines" implies that mining will take place everywhere. The reality is that mining will never take place where a mineral deposit does not now exist. We do know that mineral deposits can be scattered or clustered but they are much rarer than the statement suggests. The time required for geologic processes to "manufacture" a mineral deposit ensures that man will never mine a mineral deposit that doesn't exist now. The vast majority of pristine landscapes that remain open to mineral exploration will never be mined.

Mining will also never occur where mineral resources remain undiscovered. Conflict exists between wilderness values and mineral development because the geologic forces which have produced the pristine and scenic values commonly associated with WSAs of the California Desert have also brought significant mineral resources within man's reach. In some instances, the harshness of the desert itself produced the mineral deposits. Limited or difficult access to many of these areas has preserved their scenic values but also deferred adequate mineral exploration. Future exploration for undiscovered mineral deposits will not be allowed in wilderness areas.

Mineral occurrences become ore deposits only after the contained metals or other elements are determined to have a use; only after the mineral occurrence has been found; and only after it has been demonstrated that the economic conditions of supply and demand are such that an individual will earn a profit from mining the ore. Mining is a direct result of the demands of society and exists because of the importance of mineral resources.

THE IMPORTANCE OF MINERAL RESOURCES

Several thousand years ago man picked a rock from the ground and fashioned a tool. Our lives were changed for all time. The discovery of a particular stone with special properties that allowed it to form a sharp cutting edge created a demand for a mineral resource. At first, every individual probably searched for and collected his own rocks, for his own use. Not all rocks were suitable for *working*. Some were *prettier*. Some were better than others. None were found everywhere. Imagine the first trade that was made, perhaps a skin for a rock. Something of value from the earth was *sold for a profit*. A tool had added some efficiency to man's life. Demand for that kind of rock grew as more people discovered the benefits that the tool brought. Actual mining operations were initiated. This was the birth of the mining industry.

Subsequent discoveries led to new technologies and man progressed from the Stone Age to the Bronze Age, to the Iron Age, and now to the Computer Age. Products refined from minerals are used by people because they want the *better life* that the product makes possible. Today, every non-living item that we come in contact with, except for the air that we breathe, has been made possible by, or from, a mineral or rock that was *mined*.

The very basis of the American lifestyle, so envied by the rest of the world, has come from the earth. Materials we find essential to our everyday life are overwhelmingly mined from the ground. Our cars, our televisions, our refrigerators, our lights, our computers, our pictures, and nearly every item that we touch every day has some component that is *mined*. The telephone alone requires 42 different mineral commodities. Items not made from a mineral product are fabricated by tools or machines that were refined from minerals. Our organic-based items are made with or contain many components derived from minerals. Most vegetables are fertilized with chemicals that were once mined. They are cultivated and transported to market by machinery and packaged in containers made from materials that are mined. Nearly all paper products are made using chemicals and fillers that were mined.

The importance of mineral resources has lost its relevance to the average person. Today people tend to think that electricity comes from a wall outlet, house foundations from cement trucks and watches from Japan. Minerals are most often disguised as finished products. According to BOM, each American uses approximately 40,000 pounds (lb.) of new materials each year. Throughout a lifetime

the average American will use approximately 91,000 lb. of iron and steel, 795 lb. of lead, 757 lb. of zinc, 1,500 lb. of copper, 3,593 lb. of aluminum, 360,500 lb. of coal, and more than 1.2 million lb. of sand, gravel, stone, clay and cement.

The mining industry explores for and produces various mineral resources. These minerals are refined and used by the manufacturing industry to produce tools, equipment and other merchandise which are needed by society for other business pursuits. The contribution of mining to the economy may appear small but it is important. According to BOM, in 1988 the American mining industry produced \$30 billion in raw minerals which were transformed into \$300 billion worth of processed products of mineral origin, the basic building blocks of an economy with a Gross National Product of \$4,870 billion.

Modern society creates the demand for mineral commodities. Mining is a requirement of our lifestyle. The mining industry does not begin mining operations without careful thought. Mining activities represent extensive exploration efforts, planning and long-term, high-risk investments of considerable funds. The mining industry exists because people want its products. Few people do not benefit from mining and fewer would prefer a lifestyle void of these benefits. A world without mining equates to a world without houses, telephones, televisions, automobiles, money, toothpaste or indoor plumbing.

The American mining industry is an important contributor to the economy and lifestyle of all Americans. Appendix I includes a table which presents some of the uses of mineral commodities which are mined or have significant potential to be mined within the California Desert and a short discussion of the everyday uses of minerals.

THE MINERAL WEALTH OF THE CALIFORNIA DESERT

The California desert area is one of the most highly mineralized areas of the world. This is a fact widely accepted by professional engineers and geologists. Table 1 lists 81 mineral commodities that are mined, have been mined, or have the potential to be mined in the California Desert. According to BOM and the State Division of Mines and Geology, 34 separate mineral commodities are currently produced from the California Desert. Few places on earth can equal such diversity of mineral resources. The minerals now produced from the California Desert are shown on Table 1 with the superscript 1.

During 1989, California ranked second in the nation for the production of non-fuel minerals with an estimated value of \$2.839 billion, as reported by BOM, or approximately one tenth of the total domestic mineral production, a 5% increase from 1988. This ranking represented a fall from first place in 1988, as Arizona took the lead in production of non-fuel minerals due primarily to expansion of its copper production. California led all states in the production of asbestos, borates, portland cement, diatomite, calcined gypsum, construction sand and gravel, tungsten, yttrium and rare earths. California ranked

Table 1

MINERAL COMMODITIES THAT ARE MINED¹, HAVE BEEN MINED², OR
HAVE POTENTIAL TO BE MINED³ IN THE CDCA

Agate ^{2,3}	Molybdenum ■ ³
Alunite ³	Muscovite Mica ■ • ^{2,3}
Antimony ■ ³	Nickel ■ ³
Arsenic ³	Oil and Gas ■ ^{3,4}
Barite ^{2,3}	Perlite ^{1,2,3}
Beryllium ■ ³	Phosphate ³
Bismuth ■ ³	Platinum Group Metals ■ ³
Calcium Borates ^{1,2,3}	Potash ^{1,2,3}
Sodium Borates ^{1,2,3}	Pozzolan ^{2,3}
Calcium Chloride ^{1,2,3}	Pumice ^{1,2,3}
Chromium ■ ³	Pyrophyllite ^{1,2,3}
Cinders ^{1,2,3}	Quartzite and Quartz Sand ^{2,3}
Clay Minerals ^{1,2,3}	Rare Earth Minerals •
Kaolinite ^{1,2,3}	Cerium • ^{1,2,3}
Bentonite ^{2,3}	Lanthanum • ^{1,2,3}
Hectorite ^{1,2,3}	Neodymium • ^{1,2,3}
Sepiolite ³	Praseodymium • ^{1,2,3}
Cobalt ■ ³	Samarium • ^{1,2,3}
Copper ■ ^{2,3}	Gadolinium • ^{1,2,3}
Decorative Building Stone ^{1,2,3}	Europium • ^{1,2,3}
Dimension Stone ^{2,3}	Terbium • ^{1,2,3}
Dolomite ^{1,2,3}	Sand, Gravel and Crushed Rock ^{1,2,3}
Epidote ^{2,3}	Silver ■ ^{1,2,3}
Feldspar ^{1,2,3}	Sodium Carbonate ^{1,2,3}
Fluorite ■ ^{2,3}	Sodium Sulfate ^{1,2,3}
Gallium ³	Strontium • ^{2,3}
Garnet ^{2,3}	Sulfur ^{2,3}
Gemstones (semi-precious) ^{1,2,3}	Talc ■ • ^{1,2,3}
Geothermal Energy ■ ^{1,2,3,4}	Thorium ■ ³
Gold ^{1,2,3}	Tin ■ ^{2,3}
Green Schist ^{2,3}	Titanium ■ ³
Gypsum ^{1,2,3}	Trona ^{1,2,3}
Halite (salt) ^{1,2,3}	Tufa ^{2,3}
Iron ^{2,3}	Tungsten ■ ^{2,3}
Jade ^{2,3}	Uranium ^{2,3}
Kyanite • ^{1,2,3}	Vanadium ■ ^{2,3}
Lead ■ ^{2,3}	Wollastonite ^{2,3}
Limestone ^{1,2,3}	Yttrium ³
Lithium ^{2,3}	Zeolites ³
Magnesium ³	Zinc ■ ^{2,3}
Manganese ■ ^{2,3}	Zirconium ³
Mercury ■ ^{2,3}	

■ Strategic and Critical⁶

• Maintained in National Defense Stockpile⁵

⁴ The Defense Production Act Amendments of 1980 specified "energy" to be a Strategic and Critical Material

⁵ Source: Strategic and Critical Materials Report to Congress, October 10, 1990, Department of Defense

second in the production of natural calcium chloride, feldspar, byproduct gypsum, gemstones, industrial sand and gravel, sodium compounds, mercury (a byproduct of gold mining), magnesium compounds and gold. The proportion of U.S. 1989 domestic mineral production based on value, as reported by BOM, from California was: borates 100%, rare earths 97%, pumice 42.5%, sand & gravel for construction 21.2%, cement 15.8%, industrial sand & gravel 11.6%, gold 11.4%, gypsum 10.3%, crushed stone 4.3%, dimension stone 3.2%, and clays 3.0%. Figures for other commodities are not available because they are considered confidential by the reporting companies and are not released by BOM. Over one half of the total California production was from the CDCA.

Production of sodium borate and calcium borate from the CDCA during 1989 accounted for 100% of U.S. production, 86% of U.S. consumption and 35% of total exports (significant amounts are imported for refinement and consumption or re-export). Rare earth mineral production from the CDCA comprises about 97% of total U.S. production, an estimated 83% of total U.S. usage and possibly 86% of total exports. Cement, gypsum and talc from the California Desert account for approximately 9%, 9% and 15%, respectfully, of the total U.S. production (estimated from 1988 production figures). Geothermal energy from the CDCA now produces 435 Megawatts of electricity which amounts to 18% of the total national production of 2,425 Megawatts. Gold production from the CDCA is estimated to be 10% of the total U.S. production and anticipated increases in production will increase this figure substantially. In comparison, the total 25 million acres of the CDCA equals less than 25% of the land area of California and only 1.01% of the land area of the United States.

Sand and gravel, cement and other mineral commodities used for construction materials are the very foundation of our standard of living. The demand for industrial minerals, particularly sand and gravel, from the Desert is tremendous because of the needs of over 18 million people in Southern California. The metropolitan areas of Southern California are experiencing a growth rate estimated at 10% and, as the sand and gravel deposits in urban areas are depleted, BLM expects a large increase in demand for the Desert's undeveloped resources. During Fiscal Year 1990 alone, sales contracts and Free-Use permits for nearly 60 million tons of mineral materials with an estimated royalty value to the U.S. of \$29 million were processed by BLM in the California Desert District. (Free-Use permits are granted to nonprofit organizations and certain government agencies without charge.)

Current annual mineral production from the California Desert equals an estimated \$1.5 - 2.0 billion. This amount is a major direct contribution to the economy of Southern California. According to the California Department of Economic Development, in 1989 there were 41,600 persons employed in mining jobs within the state, of which an estimated 20,000+ were in the five county area comprising the CDCA. These figures do not include those jobs that provide support services to the mining industry, nor those jobs which provide support services to employees of the mining industry, or jobs that result from manufacturing or fabrication of products refined from minerals. As with any industry, mining supports

an economic base broader than just the individuals which it employs. There are both direct and indirect effects.

In late 1987, Dr. Shirley C. Anderson of California State University, School of Business Administration & Economics, conducted a study ("Mineral Resources of the California Desert and Their Significance to California's Economy" in Compendium, The California Desert Mineral Symposium, 1989, BLM, p. 7-46) to determine the actual economic impact of the then \$1.3 billion mineral industry of the CDCA. In her study, Dr. Anderson solicited information from mineral producers. This data was then statistically analyzed by the Regional Science Research Institute of Rhode Island with a computer based input-output model to determine the total economic impacts of mining across 82 sectors of the local economy. Products and services provided to the mining industry are paid for by mineral receipts. These sales create jobs and the need for other products and services. Wages paid to miners are in turn spent on other goods and services which create additional jobs. Manufacturers that use minerals produced from the CDCA provide jobs and need still other products and services.

The study identified an additional contribution to the total local economy from indirect effects of approximately 77% of the direct effect. Each \$1 million of mining output in the CDCA provides 15.1 jobs, \$334,628 of personal income, \$28,854 for local tax revenues, \$47,180 in state tax revenues and an actual contribution to the Southern California economy of \$1,766,000.

Assuming that the 'multiplier' is accurate for 1989, the mining industry of the CDCA produced an estimated \$1.75 billion of mineral commodities but contributed \$3.09 billion to the Southern California economy. These figures are based upon production values reported by the BOM. In the last official estimate (1986), the U.S. Bureau of Economic Analysis determined a direct contribution of \$5.93 billion from mining to the \$533.8 billion Gross State Product for California.

During 1990, BOM conducted a mineral investigation of the East Mojave National Scenic Area (EMNSA), a 1.5-million-acre portion of the CDCA. In this publication (Minerals in the East Mojave National Scenic Area, California: An Economic Analysis, BOM, 1990, MLA 6-90, vol. I & II) the geology, mineral resources and mining history were compiled for 701 mines and prospects identified within the EMNSA. The mineral investigation identified mineral resources with a total value of \$5.0 billion. The economic analysis recognized 24 mines and prospects as profitable to mine under present economic conditions. These 24 mineral properties were studied further to determine the economic impacts which would result from three different withdrawal scenarios: 1) full access, 2) HR-3460, and 3) S-11/HR-780. These scenarios represent varying degrees of access restrictions associated with different proposals for land withdrawal from mineral entry (scenarios 2 and 3 represent legislation proposed during the 101st Congress). The results of the study are summarized in Table 2 and illustrate the magnitude of economic impact that would result from withdrawal of mineral resources. BOM is, at present, conducting an additional

Inventory of withdrawals and management practice restrictions which affect access to known mineral resources on federal lands within the CDCA as part of their Inventory of Land Use Restraints Program.

Table 2: Potential Economic Impacts of Access Restrictions
Within the East Mojave National Scenic Area
as a Result of Pending Legislation

<u>Impact</u>	<u>Full Access</u>	<u>HR-3460</u>	<u>S-11/HR-780</u>
Cumulative mine revenues	\$3.0 billion	\$2.9 billion	\$1.0 billion
Cumulative personal incomes	\$940 million	\$880 million	\$320 million
Annual jobs provided	2,379	2,165	936

Neither the Anderson study nor BOM's EMNSA study evaluated the impacts of possible price differentials of locally produced versus imported mineral commodities. Products imported from other regions of the U.S. or abroad can replace those produced locally but the cost of the imported commodity is usually higher. Higher costs for products imported into the local market are due to transportation costs, possible price setting by international cartels, taxes and tariffs, inferior quality, and other inflationary costs associated with import dependence. For instance, just transportation expenses to bring cement several hundred extra miles can increase construction costs which will impact building prices and also reduce the amount of road and bridge maintenance or construction which a tax dollar buys.

The importance of mineralization in the California Desert exceeds its current production. The true value of the CDCA must include its mineral potential. Four government agencies have separately identified over eighty separate mineral commodities with significant potential to be mined within the CDCA. These are shown in Table 1 with the superscript 3. Appendix II is a compilation of identified mineral resources and mineral occurrence potential for the WSAs of the CDCA. It is this potential for new discoveries, expansion of existing mines, and development of known mineral resources that is at stake. The mining industry's interest in exploration for mineral resources on public lands is demonstrated by the fact that over 1500 Notices and Plans of Operation within the CDCA have been submitted to BLM since the passage of FLPMA.

As discussed above, mineral commodities are the basic building blocks of our economy. Someday the ore deposits that are now being mined will be exhausted. When known mineral deposits are depleted the world will need new sources of mineral commodities. No one can accurately predict which mineral commodities may be of greatest value years in the future. As technology and economics change, the important minerals of the future may be quite different from today. Someday new uses for various

minerals will be developed. It is the potential to develop new reserves that can help stave off future stagnation of our economy.

The late Dr. Vincent McKelvey, former director of the U.S. Geological Survey, summarized the challenge:

"Appraising mineral resources is an emerging science. A final, once and for all 'inventory' of any mineral resource is nonsense. Mineral reserves and resources are dynamic quantities and must constantly be appraised. As known deposits are exhausted, unknown deposits are discovered, new extractive technologies and new uses are developed and new knowledge indicates new areas and new environments which are favorable for mineral exploration."

Many of the minerals of the California Desert are considered important to our nation's security. Those are shown on Table 1 with a ■ or • and are discussed in detail below.

STRATEGIC AND CRITICAL MATERIALS

The Strategic and Critical Materials Stock Piling Act (50 U.S.C. 98 *et seq.*) as amended in 1989 by the National Defense Authorization Act for Fiscal Years 1990 and 1991 (P.L. 101-189) mandates that specific quantities of certain materials be maintained in the National Defense Stockpile to avoid, if possible, dependence upon foreign supplies during a national emergency. These strategic and critical (S&C) materials are defined as "materials that (A) would be needed to supply the military, industrial, and essential civilian needs of the United States during a national emergency, and (B) are not found or produced in the United States in sufficient quantities to meet such need" where "the term 'national emergency' means a general declaration of emergency with respect to the national defense made by the President or by the Congress." Responsibility for management of the stockpile rests with the President subject to certain congressional approval. Executive Order 12626 transferred management authority to the Department of Defense, which must report to Congress every six months on the status of the stockpile regarding inventories, acquisitions and disposals, research and development, financial status, and development of domestic sources. From time to time the list of S&C materials may change depending upon many factors including state of the art technology, degree of import dependence, commodity substitution or predicted wartime vulnerability.

Table 3 is a list of minerals or elements which are encompassed by the list of Strategic and Critical commodities (October, 1990, Department of Defense). Each S&C commodity may not be specifically as listed but production of the mineral or element affects the production/manufacture of the specific commodity and therefore its import dependence. The actual S&C mineral commodity is often a certain grade of material which may be a mineral or is produced from a mineral.

The Defense Production Act of 1950 (22 U.S.C. 2423) was amended in 1980 to include "energy" as a strategic material. This specifically includes petroleum, fossil fuels and other natural substances. In addition, several commodities that do not meet the definition for S&C materials due to adequate current domestic production from limited sources are stockpiled because they have significant military or industrial importance.

TABLE 3
"Minerals" Designated Strategic and Critical for Certain Commodity Grades
(October 1990)

1. Aluminum/Bauxite	18. Mercury
2. Antimony	19. Mica
3. Asbestos	20. Molybdenum
4. Beryllium/Beryl	21. Nickel
5. Bismuth	22. Platinum Group Metals
6. Cadmium	23. Quartz crystals
7. Chromium/Chromite	24. Rutile
8. Cobalt	25. Sapphire/Ruby (Corundum)
9. Columbian (Niobium)	26. Silver
10. Copper	27. Talc
11. Diamond	28. Tantalum
12. Fluorspar	29. Thorium
13. Germanium	30. Tin
14. Graphite	31. Titanium
15. Indium	32. Tungsten
16. Lead	33. Vanadium
17. Manganese	34. Zinc

Undesignated Minerals Contained in National Stockpile for Certain Grades
(October 1990)

1. Asbestos (crocidolite)	4. Mica
2. Celestite (strontium)	5. Rare Earths
3. Kyanite	6. Talc

A significant aspect of the 1989 amendments (Public Law 101-189) is the mandate for development of domestic sources of supply of strategic and critical materials through research and development, recycling, incentives to domestic producers, conservation and substitutions. This illustrates the intent of Congress to investigate all means to develop domestic sources. Withdrawal of public lands that have a potential for the occurrence of S&C minerals from mineral exploration and development could seriously affect future domestic supplies. Evaluation and exploration for mineral resources requires several years of lead time prior to beginning mining operations.

The events occurring in the Middle East have clearly shown that even a moderate reliance upon foreign sources of materials can have very significant consequences to the economy and lifestyle of the United

States. An actual national emergency could prove much more serious if the supply of several materials is interrupted. Figure 1, page 13, depicts the 1989 import reliance of the United States on foreign sources of selected non-fuel mineral commodities as determined by BOM in Mineral Commodity Summaries 1990.

MINERALS IN THE WILDERNESS STUDY PROCESS

Arguments used by Dr. W. Thomas Goerold and others to support wilderness or national park designation of WSAs recommended unsuitable by the BLM have alleged: 1) that nearly all economic reserves have been excluded from WSAs, 2) that mineral resources which might be within WSAs will be available for mineral development through "valid existing rights," and 3) that nearly all mineral resources of the CDCA have been discovered. These arguments are not supported by the facts.

Wilderness Study Areas were just that: *study areas*. Section 603 of FLPMA directed that all public lands of the U.S. be inventoried to determine if they met certain minimum criteria and, if so, be delineated as WSAs. Resource values were then evaluated to determine each WSAs *suitability* for wilderness designation. The minimum requirements were:

1. Size. " . . . those roadless areas of five thousand acres or more and roadless islands of the public lands, identified . . . as having wilderness characteristics described in the Wilderness Act of September 3, 1964"
2. Naturalness. The imprint of man's work must be substantially unnoticeable.
3. And either:
 - a. An outstanding opportunity for solitude, or
 - b. An outstanding opportunity for a primitive and unconfined type of recreation.

Wilderness values, not mineral resources, were considered in the delineation of the WSA boundaries. WSA boundaries were drawn "at the limits of the substantial imprint of man" to ensure that the largest possible area was included in each of the study areas. In many WSAs, the "imprints" of man, such as, old mines, exploration sites, unmaintained roads, old buildings and other structures associated with mineral exploration and development were included within the boundaries. Areas of active exploration were often included in WSAs. Larger operations which were substantially noticeable were "cherry-stemmed" out of WSAs because of their surface operations, not because of the associated mineral resources. Known mineral reserves associated with many active mining operations extend into adjacent WSAs. Only *after* the WSA boundaries were delineated were any other resource values considered, studied or evaluated. Although the surface disturbance of nearly all operating mines was excluded from WSAs, mineral resources were often included.

FIGURE 1

1989 NET IMPORT RELIANCE^{e 1} OF SELECTED NONFUEL MINERAL MATERIALS AS A PERCENT OF APPARENT CONSUMPTION²

from: Mineral Commodity Summaries, 1990, Bureau of Mines

Major Sources (1985-88)

ARSENIC	100	France, Sweden, Mexico, Canada
CESIUM	100	Canada, Fed. Rep. of Germany
COLUMBIUM (niobium)	100	Brazil, Canada, Thailand
MANGANESE	100	Rep. of South Africa, Gabon, France
MICA (sheet)	100	India, Belgium, France, Japan
RUBIDIUM	100	Canada
STRONTIUM (celestite)	100	Mexico, Spain
THALLIUM	100	Bel.-Lux., U.K., Fed. Rep. of Germany, France
GEM STONES (natural & synthetic)	99	Belgium, Israel, India, Rep. of South Africa
BAUXITE & ALUMINA	97	Australia, Guinea, Jamaica, Suriname
DIAMOND (industrial stones)	95	Ireland, U.K., Rep. of South Africa, Zaire
PLATINUM-GROUP METALS	94	Rep. of South Africa, U.K., U.S.S.R.
FLUORSPAR	91	Mexico, Rep. of South Africa, China, Spain
COBALT	86	Zaire, Zambia, Canada, Norway
TANTALUM	85	Thailand, Brazil, Canada, Australia
CHROMIUM	79	Rep. of South Africa, Turkey, Zimbabwe, Yugoslavia
BARITE	77	China, India, Morocco
TIN	73	Brazil, China, Indonesia, Malaysia
TUNGSTEN	73	China, Bolivia, Fed. Rep. of Germany, Canada
POTASH	72	Canada, Israel, U.S.S.R., German Dem. Rep.
ASBESTOS	65	Canada, Rep. of South Africa
NICKEL	65	Canada, Norway, Australia, Dominican Republic
ZINC	61	Canada, Mexico, Spain, Peru
ANTIMONY	60	China, Rep. of South Africa, Mexico, Hong Kong
SELENIUM	59	Canada, U.K., Japan, Bel.-Lux.
CADMIUM	56	Canada, Australia, Mexico, Fed. Rep. of Germany
IODINE	56	Japan, Chile
STONE (dimension)	48	Italy, Spain, Canada, Taiwan
PUMICE & PUMICITE	43	Greece, Italy
PEAT	41	Canada
GYPSUM	37	Canada, Mexico, Spain
BERYLLIUM	23	Brazil, China, France, Rep. of South Africa
SILICON	23	Brazil, Canada, Norway, Venezuela
QUARTZ CRYSTAL (industrial)	22	Brazil, Namibia
IRON ORE	20	Canada, Brazil, Venezuela, Liberia
MAGNESIUM COMPOUNDS	20	Greece, China, Canada, Ireland
CEMENT	17	Mexico, Canada, Spain, Greece
SODIUM SULFATE	16	Canada, Mexico
NITROGEN	14	Canada, U.S.S.R., Trinidad & Tobago, Mexico
IRON & STEEL	13	EC, Japan, Canada, Rep. of Korea
ZIRCONIUM	13	Australia, Rep. of South Africa, Argentina, Canada
COPPER	9	Canada, Chile, Peru, Zaire
LEAD	8	Canada, Mexico, Australia, Peru
SALT	8	Canada, Mexico, Bahamas, Chile
SULFUR	8	Canada, Mexico

^eEstimated.¹Net import reliance = imports - exports + adjustments for Government and industry stock changes.²Apparent consumption = U.S. primary + secondary production + net import reliance.

NOTE:

For a number of minerals, net import reliance data are withheld or incomplete. However, commodities for which sufficient data are available to indicate a significant degree of import dependency include: andalusite (Republic of South Africa), bismuth (Mexico, Belgium, Peru, United Kingdom), graphite (Mexico, China, Brazil, Madagascar), ilmenite (Australia, Canada, Republic of South Africa), mercury (Spain, China, Turkey, Japan), pyrophyllite, wonder stone (Republic of South Africa), rhenium (Chile, Federal Republic of Germany), rutile (Australia, Republic of South Africa, Sierra Leone), tellurium (Canada, United Kingdom, Japan, Philippines), and vanadium (Republic of South Africa, South America, European Community, Austria).

It is also misleading to say that all valid mining claims will be protected by "valid existing rights" after wilderness designation. Appendix III is a compilation of mining claims located within WSAs of California, as of early 1988. The mere existence of a mining claim does not accord a miner with "valid existing rights." BLM must follow certain procedures in determining the existence of valid existing rights for each claim. (See Appendix IV.) The miner may have a promising prospect but unless he can prove an economic ore body at the time of withdrawal, the claim will be canceled and consequently a future economic venture could be precluded. Several considerations are involved which may significantly impede further development and the ability of claims to pass the valid existing rights test. Even if the test for valid existing rights can be met, there are additional burdens that will be placed on the operator. These include:

- 1) Added restrictions (as experienced in the establishment of Death Valley National Monument):
 - a. Additional environmental constraints regarding noise and visual impacts.
 - b. Additional access constraints requiring higher transportation costs for equipment and mined material.
 - c. Limits on expansion of existing mine and facilities resulting in early shut-down and loss of financial gain and incentive.
 - d. Limits on type and size of mining equipment resulting in increased costs to the operator.
- 2) Limits on the appropriation and development of water sources requiring increased expenditures to import water to the mine or processing site. Mining operations need water to process ore, provide drinkable water for employees, etc.
- 3) Limits on future exploration activities.

Study of the mineral resources of WSAs has been a dynamic, ongoing process over a period of years. Every attempt was made to equate the mineral potentials of all WSAs (Appendix II) to a single timeline. However, because of the variable nature of geologic data and evaluation, inconsistencies can and do exist between them. Geologic evaluations continue, even now, as part of the multiple resource management process. That is the nature of geologic evaluations. Geology is not an exact science due to the limited amount of data available. Geologic inferences must constantly be made based upon the amount of current information available. As the amount of data changes so might the geologic interpretations. As economic conditions and limitations change so do the amounts and types of acquired geologic data. For example, with the energy crisis, the escalating selling price of crude oil altered the economic depths of production. Deeper exploration limits resulted in new discoveries in areas of previously unrewarding exploration activities. Oil and gas production changed from a short-term *crisis* to a short-term *glut*. This is not a unique phenomenon. Our economy, technology and mineral resource needs have changed many times during the past several decades.

The inference that 100+ years of exploration has discovered all the mineral deposits of the California Desert is not based upon fact. The issue here is that the geologic structures and mineral deposits that were discovered and mined in the past were those high grade occurrences visible at the surface. With the new technologies available today, it is becoming more feasible to explore for and recover low grade disseminated minerals at the surface and subsurface. Wilderness designation of all WSAs of the CDCA would exclude mineral exploration and development and would eliminate much of the best place in the United States to look for mineral deposits, both metallic and non-metallic. Sub-surface exploration has not been conducted in most of the California Desert. Only the location of known mineral deposits is apparent.

When known mineral deposits are depleted the world will need new sources of mineral commodities. Decreasing supplies will probably lead to price increases and the economic justification to mine lower grade deposits at greater depths. No one can accurately predict which mineral commodities may be of greatest value years in the future. As technology and economics change, the ore deposits of the future may be quite different from today.

All resource values were carefully weighed to determine the suitability of each WSA for wilderness designation. Many specific interest groups had input into the study process. In some instances, management decisions were made that were contrary to the preferences of geologists and engineers involved with this study process and several WSAs are being recommended suitable for wilderness that contain significant mineral resource potential. Wilderness values for these areas were determined to be superior to all other resource values, and BLM land management specialists concluded that the areas could be managed as wilderness. In general, WSAs with both high wilderness values and high mineral resource values were recommended suitable for wilderness designation by BLM.

MINERALS AND THE ENVIRONMENT

Mineral resources, the very basis of our lives and technology, are a part of the earth. This leads to one inescapable consequence: to use them we must mine them. If roads and buildings, cars, planes and paper are necessary, then also, are gravel pits and mines. To use something from the earth requires its extraction, a hole. There is no alternative. The sentiment has become "do it elsewhere," but this is not a choice because minerals can only be extracted where they exist. It is not a question of *preserve it or destroy it*, but rather, a choice of responsible management of all natural resources.

BLM, with other state and local regulatory agencies, endeavors to minimize impacts to, and ultimately reclaim, as many other natural resources as is possible and practical. Mineral exploration activities are easily regulated and reclaimed, without significant, unnecessary and undue degradation. Mining activity beyond exploration will never occur in any area which does not host an economic mineral deposit.

Mining activities are controlled by stringent federal and state laws, regulations and policy, including strict requirements for reclamation bonding, inspection and enforcement. Mining is also controlled by BLM's surface management policies of the multiple-use class guidelines of the California Desert Plan. An operator must receive approval by BLM and state or local agencies on a plan of operations before any development activity may be undertaken. Environmental impacts are assessed by specialists and appropriate stipulations and mitigation measures are included as a condition to plan approval. Public involvement in the study and approval process ensures that local values are fully considered.

Mined Land Reclamation is now a degreed science embracing many natural resource specialties. Industry reclamation specialists are rapidly developing procedures which can minimize the impacts of completed mining operations. Government and industry are applying the concepts of slope stabilization, artificial rock coloration, creative rock placement and revegetation with native species. The word "abandonment" now applies to the orderly procedure associated with decommissioning a mining operation, not the mining industry's legacy.

THE COST OF MINERAL WITHDRAWAL

Withdrawing large portions of the California Desert from mineral exploration and development for preservation as national parks or wilderness would be costly. The desert is recognized as a geologic storehouse of mineral wealth and contains a variety of mineral deposits that are important to both local and national economies, as well as, the nation's security.

Within the 25-million-acre CDCA there are over 6 million acres that are now withdrawn as parks and military reservations and are not available for mineral exploration. Private, state and other government land accounts for 7.2 million acres. The remainder, approximately 11.8 million acres, has been open to mineral exploration under various BLM land use classifications ranging from intensive use (0.5 million acres) to WSAs (6.3 million acres). The BLM has identified 2.1 million acres suitable for wilderness designation within the CDCA. If these lands are designated as wilderness, 9.7 million acres of public lands would remain open for mineral exploration. Most of the lands remaining open for mineral exploration under BLM's recommendations (5.9 million acres) would be managed under the strict limitations imposed by the "limited use" land classification. In nearly all cases, private and state inholdings within areas designated as wilderness areas will be subject to wilderness restrictions and not available for mineral exploration. Acquisition of state and some private inholdings through exchange will further reduce the amount of BLM administered lands outside of wilderness areas.

Because the California Desert is so highly mineralized, withdrawing large amounts of land from mineral exploration would have significant consequences. The extent of impacts is dependent upon the amount of land and mineral potential withdrawn from mineral entry. Some current operations will cease. Many

current operations will face curtailment when dwindling reserves are not replenished. Impacts to the economy of Southern California are obvious with up to \$3 billion at stake, annually. Industry demand to explore the lands remaining open to mineral exploration will increase in an attempt to replenish reserves as production decreases. Royalty revenues paid to the U.S. for certain mineral commodities could decrease. Substantial public land management expenses will be incurred through valid existing rights determinations (Appendix IV) and land acquisition costs. Reserves that would supply our future needs will remain undiscovered. Competition within the mining industry will decrease as some companies go out of business. Import dependence will increase. A large portion of a possible major source of many S&C materials may no longer be available for exploration. Prices to the consumer will increase, particularly for those commodities serving a local market.

CONCLUSION

As part of the study of each WSA, BLM weighed both the value and manageability of wilderness characteristics. WSAs recommended suitable for wilderness designation by BLM will complement National Monuments and the National Wilderness Preservation System. WSAs not recommended by BLM for wilderness designation exhibit less than outstanding wilderness characteristics. In addition, BLM has conducted comprehensive evaluations of the mineral potential of all WSAs of the CDCA. BOM and USGS have evaluated the known mineral resources of only those areas recommended suitable for wilderness designation by BLM. The diverse mineral resources of the California Desert are important and make significant economic and commercial contributions to Southern California and the nation. The potential for future discoveries of mineral deposits is substantial.

Our world is confronted with many challenges to protect the environment in which we live. There exists within America an eagerness to rally in support of these efforts. All are worthy causes but care must be exercised that other life values are not degraded without thorough consideration of the possible costs. Mineral resources are of tremendous value to our lives. We cannot overlook the importance of mineral resources. There must be a balance between needs and uses of the public resources. BLM's land management policies can provide appropriate protection of multiple resource values.

APPENDIX I

MAJOR USES OF THE MINERAL COMMODITIES OF THE CDCA

COMMODITY	USES
Agate	Primarily of interest to collectors and artisans.
Alunite	Used in the production of alum and some potash fertilizers, and as a source of aluminum and potassium
Antimony	A metal used in the manufacture of various anti-friction alloys, metal type, ammunition, corrosion resistant pipes and pumps, roofing sheets, solder, and batteries. Also used in the manufacture of fireworks, matches and blasting caps. Salts are used in vulcanizing rubber, in making glass, textiles, flame retardants, pharmaceutical and as a pigment.
Arsenic	Metallic arsenic is used in alloys. White arsenic is used in medicines, insecticides, preservatives, pigments, glass, paint and fireworks. Other uses include semi-conductor chips, integrated circuits, solar cells, light emitting diodes, etc.
Barite - (Barium minerals)	Used in the manufacture of glass, plastics, synthetic rubber, ceramics, industrial ceramics and pigments. Extensively used as filler in such products as bristol-board, heavy printing paper, playing cards, rope finishes, brake linings, clutch facings, plastics, linoleum and paint. Used as a concrete aggregate to weight down pipelines, nuclear reactor shields and as a paving material. Used in medicine for x-rays and by the chemical industry in various compounds for reagents and catalysts (such as in sugar refining, waterproofing and fireproofing textiles, in various drugs, pyro-technics, pesticides, case hardening of steel and phosphors for florescent lamps). Also used as welding flux, as additives to oil and grease, in well drilling as a drilling fluid weighting agent, in the refining and recovery of magnesium, indium and zinc and in alloys. Of particular interest in high temperature super conductor research.
Beryllium	Used in the nuclear industry and by the aircraft industry to make lightweight, very strong alloys. Salts are used in fluorescent lamps and x-ray tubes, high density electronic circuits, satellite structures, space telescopes, mirrors, X-ray windows and as a deoxidizer in the bronze industry. Beryl is a semi-precious gemstone.
Bismuth	Used in low fusion point and anti-friction alloys. Also used in medicines and cosmetics. Applications in X-Ray photography. Of particular interest in high temperature super conductor research.
Borates	Principal source of boric acid. Used as a raw material in the glass and ceramic industries. Also used as or in detergents, bleaches, fertilizers, herbicides, pharmaceutical, cosmetics, antifreeze compounds, adhesives, solvents, tanning agents, fire retardants, wood preservatives, enamels and paints, welding flux, and specialty metals, alloys and computer components. Also used as fuel additives, abrasives, embalming fluid, nuclear reactor control rods and shielding. Valuable for flameproofing plastics and in the steel manufacturing process. Boron is very important as rocket fuel and as an ingredient in very strong alloys.
Calcium Chloride	As a deliquescent salt (capable of becoming liquid by absorbing moisture from the air), CaCl is used as a drying and dehumidifying agent and in controlling dust, melting snow and ice on roads. Also used as a cement setting agent, especially in the drilling industry.
Chromium	Important in steel alloys, stainless steel and chrome plating. Used in the manufacture of some paints, in leather tanning and in mordants.
Cinders	Used as an aggregate in highway construction, concrete and railroad ballast. Used as an abrasive. Popular as a landscaping component.

COMMODITY	USES
Clays	The term "clay" is one of the most complicated natural raw materials to define because of its breadth of use. "Clay" describes a diverse group of fine grained minerals – the so called clay minerals which include kaolinitic clays that embrace the refined kaolin and halloysite minerals as well as the kaolin-containing ball clay and refractory clay rock-based products; smectite clays that are largely dominated by bentonite (in the form of natural and chemically treated forms of montmorillonite), hectorite and saponite; the palyorskite-sepiolite clay group; and clays and clay products that comprise the structural clays used for making bricks, pipes and tiles for the construction industry.
Kaolinite	A clay used for the manufacture of paper, ceramics, paint, rubber and plastics. Also used as refractories (particularly with basic oxygen steelmaking), by the chemical industry in the manufacture of catalysts and by the pharmaceutical industry in the manufacture of medicines. Other uses include flexible floor tiles, carpet backing, film, tape, cable insulation, fillers, parts for automobile catalytic converters, etc.
Bentonite	A clay used in well drilling as a drilling mud, as a bond for foundry sand and in iron-ore pelletizing. Used as a filtering agent for purifying water, wine, etc; as a water impedance for lining reservoirs, irrigation ditches, etc.; as an ingredient in cosmetics, animal feed, copy paper, pharmaceutical, etc; as a filler in paint, plastic and putty; as an additive to ceramics; as a catalyst; as a carrier for pesticides; as a soil conditioner; as an aggregate in concrete; and as a slurry for fighting forest fires. Also used in the manufacture of wallpaper; in bleaching oils and drycleaning fluids; as an absorbent for oil, grease, water, chemicals, etc.; and as a pet litter.
Hectorite	An unusual and rare magnesium-lithium clay mineral with much sought after special physical properties that impart a delicate 'house of cards' structure to liquid systems to form a gel. The diverse applications of this clay include non-drip emulsion paints, aggregate coatings, electro-deposition paints, cosmetics and toiletries, household products, anti-static agents, vitreous enamels, aerosols, adhesives, beer and wine clarification, rubber latex, cement/fly ash grouts and the important organoclad hectorites which provide superior performance levels for innumerable specialty uses.
Sepiolite	Applications include environmental deodorants, catalyst and pesticide carriers, ceramics and porcelain, asphalt coatings, paints, pharmaceutical, decolorizing agents, filter aids, anti-caking agents, plastisols, rubber, animal nutrition, detergents, cosmetics, agriculture, grease thickeners, carbonless copy paper, drilling fluids, etc.
Cobalt	Primarily used in superalloys for industrial and aircraft gas turbine engines; high-strength, heat-resisting and magnetic steel alloys; other alloys; cutting and wear resistant materials; tools; catalysts; and paint driers. Other uses include glass decolorizers, pigments, feed or nutritive additives, mill products, welding materials, etc.
Copper	Essential trace element for plants and used as fertilizer to stimulate crop production (sulfate, oxide or in chelated form). Several ores of copper (chalcocite, chalcopyrite and cuprite) are considered to be among the most important mineral sources from which other products originate. Widely used for electrical and plumbing purposes. Also used in alloys (brass, bronze and a vibration resistant alloy with beryllium) and as construction sheet material. Of particular interest in high temperature super conductor research.
Decorative Building Stone, Dimension stone, sunburst pebbles, lava rock, etc.	Used in construction and landscaping.
Dolomite	Used as structural and ornamental stone, in ceramics and glass manufacture, as a refractory and flux, by the chemical industry in the preparation of magnesium salts and as a source of fertilizer magnesium.

COMMODITY	USES
Epidote	Used in making terrazzo chips for making colorful concrete floors.
Feldspar	Used in manufacture of glass, porcelain enamel and many ceramic products (pottery, plumbing fixtures, electrical porcelain, tile, dinnerware, etc). Used as a flux; as a filler in latex, urethane and acrylic paints; as an abrasive cleaner and polisher. Minor use as decorative building stone.
Fluorite	Many uses including abrasives, ceramics, chemicals, fluorinated hydrocarbons, fluxes, glass manufacture, hydrofluoric acid, and sometimes for lenses and prisms.
Gallium	A rare metallic element that is widely distributed in nature but occurs only in tiny quantities in any of the minerals that contain it such as zinc ores, banxite, and certain iron ores. Use as a backing for special optical mirrors, in high temperature thermometers, as a nonpoisonous substitute for mercury in dental alloys. Also used in optoelectrical devices (lasers, solar cells, photo detectors) and integrated circuits.
Garnet - Iron-Aluminum Silicate minerals	Used to manufacture coated abrasive products (sand paper etc.); in grinding and lapping of glass, metals, ceramics, plastics; for sandblasting; and grinding wheels and buffing compounds. Gemstone.
Gemstones (semi-precious)	Primarily of interest to collectors and artisans.
Geothermal energy	Used for electrical generation or direct heating purposes.
Gold	Used in jewelry, electronics, as a base for monetary systems worldwide, and as an alloy with other metals in dentistry.
Green Schist	A metamorphic rock rich in ferro-magnesium minerals.
Gypsum	Used in cement, plaster of paris, wallboard, stucco, pottery, as a soil conditioner, fertilizer and as an additive to animal feeds. Also used as filler material in paints, paper, cotton goods and pesticides. Has applications in well drilling (coagulates clay and thins mud).
Halite (salt)	A vital ingredient in human and animal diets. Very important in the chemical industry for the preparation of soda, hydrochloric acid, caustic soda and sodium. Used in food processing and as a preservative. Used as a drilling fluid additive.
Iron	A myriad important uses makes iron the least expensive and most widely used metal. The construction industry ultimately is the greatest consumer of iron and steel products in the form of sheet metal, beams, rebar, nails, bolts, screws, wire, pipes, hardware, fixtures, ornaments, etc. The automobile and other transportation industries are obvious important users of iron and steel, as are machinery and tool builders. Cans and containers, household and office products, weapons, alloys, and sundry other items demonstrate the wide uses for iron and steel. Iron is an important micronutrient used in fertilizers and dietary supplements. Iron is also used by chemical and other industries.
Jade	A hard greenish gemstone of primary importance to collectors and artisans.
Kyanite	Used for high temperature porcelain products, perfect electrical insulators and acid resistant products. Mined for a source of Al_2O_3 for manufacturing high temperature mortar and cement.
Lead	Used in automobile batteries, gasoline additives and tanks, solder, seals, bearings, electrical parts, electronics, ammunition, television glass, construction, communications, protective coatings, ballast or weights, containers, type metal, alloys, foil, wire, kame, glass, etc.
Limestone	Used in the manufacture of cement and mortar; as building stone or aggregate; as a flux; in lithography and ceramic products, as well as other uses.

COMMODITY	USES
Lithium	Marketed in three forms: metal, ore and chemical compounds. As an ore is used by the glass, ceramic and porcelain enamel industries. As a metal is important in nonferrous metallurgy particularly for light weight aluminum alloys for the aircraft and space industries. Various chemical compounds are important for the ceramic and glass industries, aluminum industry, chemotherapeutic treatment, batteries, lithium based lubricants and greases, air regeneration systems for space programs, refrigeration and air conditioning systems, and as a flux. Miscellaneous applications include sanitation and bleaching, hydrogen generation, catalysis, vitamin synthesis, synthetic rubber and applications in nuclear reactors.
Magnesium	Uses include magnesium metal for production of aluminum alloys used in packaging, castings and wrought products, reducing agents, cathode protection, for production of nodular cast iron, refractors, fluxes, filler, insulation, cements, decolorants, fertilizers, computer components and chemicals.
Manganese	Primarily used in the ferro-alloy industry, especially in steel and alloy manufacture of products used in construction, machinery and transportation. Also used in manufacture of many items including chemicals, disinfectants, glass, fertilizers, colored bricks, tile, paints and as a flux. Very important in making dry cell batteries.
Mercury	As a metal used in the amalgamation process for recovering gold and silver, in thermometers, barometers, scientific and electrical equipment, dental amalgams, paints, industrial control instruments. Also used in the electrolytic production of chlorine and caustic soda.
Molybdenum	Predominately used in the manufacture of special steel alloys. Also used in lubricants and greases, chemicals and fertilizers, pigments and catalysts.
Muscovite Mica	Applications in well drilling (prevention of lost circulation). Used as an insulating and dielectric material in electronic equipment; as a decorative finish on concrete, brick, etc.; as artificial snow for christmas ornaments; in the manufacture of roofing and shingles; as a protective coating on wires, cables, etc; as a filler in asphalt, enamels, mastics, cements and adhesives; to improve texture of paints, plaster and other products; in wallboard joint cements to eliminate cracking and shrinking; as a dry lubricant. Fine mica is used for a variety of applications in such products as rubber, paper, fireproof paints, porcelain and plastics.
Nickel	Used in stainless and alloy steel manufacture, non-ferrous alloys, electrical equipment, petroleum refining, household appliances, chemicals and coins. Of particular interest in high temperature super conductor research.
Oil and Gas	An energy source and a major component of the world market system. Oil is distilled into gasoline, kerosene, jet fuel, paraffin, petrochemicals, etc. Gas is used mainly as a fuel for heating homes and in power plants to produce electricity.
Perlite	Highly valued as a lightweight aggregate in such products as insulation boards, plaster, concrete, asphalt, etc. Used as an insulating material in construction; in foundry applications; in water filtration systems; in processing resins, chemicals and pharmaceutical; as a pesticides carrier; as a soil conditioner; in nursery stock packaging; as a filler in paints, enamels, glazes, plastics, resins and rubber; as a catalyst in chemical reactions; as an abrasive; and as an agent in mixtures for oil well cementing.
Phosphate	Principal use is for fertilizer but is also used to produce phosphorus and phosphoric acid for industrial and food grade chemicals.
Platinum Group Metals	Used as a catalyst in the automotive, chemical, and petroleum industries. Also used in chemical apparatus, electrical equipment, jewelry, dentistry, surgical instruments, pyrometry and photography.
Potash (potassium)	Used as a source of potassium for fertilizers and various applications in the chemical industry.

COMMODITY	USES
Pozzolan	Term applied to a variety of natural and manufactured materials which impart specific under water hardening properties to cement.
Pumice	Used as an abrasive, an aggregate, building stone and as filler for paints, etc.
Pyrophyllite	Used in refractors, rubber, ceramics, pesticides, plastics, paint, roofing, bleaching powder, textiles, cordage, wallboard and cosmetics.
Quartzite	Used as a building stone, refractories and in the manufacture of glass and ceramics.
Silica - Quartz sand	Used extensively in casting steel, iron and other alloys. Also used in the manufacture of glass.
Rare Earth Minerals	Fourteen metals compose the rare earth elements which are a transition series with atomic numbers 57 thru 71. The major uses of the rare earths are as catalysts for petroleum cracking, in the production of specialty alloys and ceramics, polishing compounds, glass additives, pigments for coloring ceramic tiles, as carbon-arc electrodes to provide incandescent white light (phosphors) and various other very specialized uses, particularly in the military. Recent technological advances have made them attractive for use in super conducting ceramic alloys.
Cerium	A rare earth element used in magnets, compounds for precision glass polishing, catalytic converter parts, phosphors, jet engine super alloys and glass decolorizer.
Lanthanum	A rare earth element used as a catalyst for petroleum cracking, for high temperature super conductor research, phosphors, jet engine super alloys.
Neodymium	A rare earth element used in high-strength permanent magnets, high temperature superconductor research, color television face plates, ceramic capacitor stabilization and lasers.
Praseodymium	A rare earth element used predominately in ceramics.
Samarium	A rare earth element used in high-strength permanent magnets, high temperature super conductors and satellite components.
Gadolinium	A rare earth element used high temperature super conductors, phosphors, satellite components, lasers, computer components, microwave filtration and nuclear reactor control rods.
Europium	A rare earth element used high temperature super conductors and phosphors.
Terbium	A rare earth element used for strong high-temperature refractories, lamps, high temperature resistant windows and lenses, color television phosphors, permanent magnets, alloys, lasers and as a catalyst for petroleum cracking. Of particular interest in high temperature super conductor research, submarine sonar and super alloys for jet fighters.
Sand, Gravel and Crushed Rock	A very high demand product used extensively within local areas for construction purposes such as aggregate in concrete and asphalt, roadbed construction and maintenance, fill, landscaping material, rip-rap along streams and rivers, etc.
Silver	Used as the major component of photographic films, in electrical and electronic products, in coins, jewelry, dinnerware, the chemical industry, alloys, etc.
Sodium Carbonate (Soda Ash)	Used in the manufacture of sodium compounds such as bicarbonate, cyanide, perborate, nitrate and silicate. Soda ash is used in the manufacture of glass, fiberglass insulation, chemicals, soap and detergents, flue gas desulfurization, pulp and paper, water treatment, etc. Also used as an additive to well drilling fluids and in metallurgy.
Sodium sulfate	Necessary for the manufacture of pulp and paper. Used extensively in detergents, glass, dyes, foods and remedies. Also used to produce synthetic sponges and various sodium compounds.

COMMODITY	USES
Strontium	Used for television picture tube manufacture, ferrite ceramic magnets for electronics, pyrotechnics, safety flares, pigments, fillers, electrolytics, greases, ceramics, high temperature super conductor research, soaps, alloys and pharmaceutical.
Sulfur	Used for agricultural fertilizers, sulfuric acid, organic and inorganic chemicals, petroleum refining, metal mining recovery circuits, pyrotechnics, pharmaceutical, etc.
Talc	A very important material, responsible for many of the distinguishing characteristics of such products as: ceramics, paint, paper, cosmetics, plastics, roofing materials, petroleum and Automotive products and rubber. Used as a filler in many of the above and other products. Talc is also used in a variety of lubricants, as an undercoating, in dry fire extinguishing powders, for cereal polishing (rice, corn, barley) as a bleaching agent, to absorb odors from foods, floor wax, in water filtration systems, as leather treatment (oil absorption), in joint fillers and grouts, in insecticides, shoe polishes, welding rod coatings, printing inks, encapsulant for artillery shells, coating for iron ore pellets in direct reduction processes and as a source of magnesium in plant foods.
Thorium	Used as a nuclear fuel. Also used in aerospace alloys, ceramics, incandescent lamp mantles, refractories, welding electrodes, etc.
Tin	Used for tin plate, solders and alloys in cans and containers and for electrical construction and transportation uses.
Titanium	Used extensively in jet engines, airframes, space and missile applications, the chemical industry, power generation, medicine and ordnance. Titanium dioxide is used as a pigment for whitening paints, paper, rubber, plastics and other materials and as a welding rod coating.
Trona - Sodium Carbonate	Used extensively in glass manufacture, various inorganic and organic chemicals, detergents, petroleum, caustic soda, paper and has applications in metallurgy.
Tufa	Used locally for construction aggregate and landscaping. Some 'high grades' are used as fillers for paints, abrasives or other specialty uses.
Tungsten	Used as a hardening agent in the manufacture of tungsten-carbide tools and machinery for metalworking, mining, milling and construction purposes. Also used for lamp filaments, fireproofing and dyeing.
Uranium	Source of atomic energy. Used for coloring glass, in X-Ray photography, as a chemical reagent, weapons, etc.
Vanadium	Used as an alloying agent with iron to produce hardened steel and in producing titanium alloys for aerospace uses. Also used as a catalyst and pigment.
Wollastonite (Calcium meta-silicate)	Widely used in the ceramic industry to improve the mechanical properties of ceramic ware and reduce warping and cracking. Used in paint manufacture for high quality white and pastel shades, as a filler and a reinforcing agent with good thermal properties. Also used in manufacture of plastics and rubber, as an abrasive, in adhesives, for welding rods and to manufacture "mineral wool" for a variety of insulation products. Also used ornamentally.
Yttrium	Used in color televisions and computer monitors, laser crystals and glass, advanced ceramic parts and coatings, super alloys, emission control catalyst substrates, heating elements, synthetic garnets for electronic applications and in gemstone substitutes. A functioning element of some rare earth alloys and compounds and is usually grouped with the rare earths.

COMMODITY	USES
Zeolites	Used as molecular sieves to aid in environmental cleanup and pollution control (ion exchangers used in removal of radioactive strontium and cesium and to extract ammonium ions from sewage and agricultural effluents). As acid resistant absorbents in gas drying and purification, zeolites are important in separation of oxygen and nitrogen from air (oxygen used for smelting, aeration and pollution control and nitrogen used in wineries and breweries). Also used as filler in paper, cements and concretes; as an aggregate in fertilizer and soil conditioners; and as dietary supplements in animal nutrition.
Zinc	Used in galvanizing steel products to prevent corrosion; in alloys (especially bronze and brass); in the chemical industry and agriculture; as a component in the manufacture of rubber and paints.
Zirconium	Due to its high refractory value, high conductivity, high density, low expansion and resistance to being wetted by molten metal, Zircon is used in foundry sands, refractories, ceramics, abrasives and in bricks and blocks for glass furnaces. Zirconium compounds have applications as ferro-alloys, in optical fibers, ceramics, jewelry, glazes, enamels, paints, pharmaceutical, abrasives, water repellents, lighting equipment, leather tanning agents and waxes. Zirconium in metallic form is useful in nuclear reactor industry (corrosion resistance and structural stability at high temps and alloying properties and specific neutron absorption characteristics) and in super alloys.

Importance of Industrial Minerals in Everyday Life

By

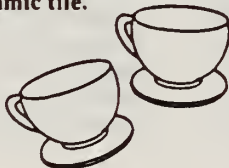
HAL McVEY, Consulting Minerals Geologist
Mineral Marketing, Inc.
Rough & Ready, California

The significance of nonmetallic minerals — termed "industrial minerals" — is little recognized by the vast majority of Californians. According to a U.S. Bureau of Mines estimate, the average American uses about one million pounds of industrial minerals, such as limestone, clay, and aggregate, over the period of a lifetime. The following article was first presented at the Industrial Minerals Conference at Marina Del Rey, California, February 15-16, 1989, and is reprinted here by permission from the author . . . editor.

Few people realize the importance of industrial minerals in their everyday lives. Perhaps a trip through a normal working day will underscore our reliance upon these nonmetallic minerals. The products that contain industrial minerals or utilize industrial minerals in the manufacturing process are highlighted in bold face.

MORNING

As we step out of bed in the morning, we place our feet on the **carpet** (calcium carbonate/limestone is used in the carpet backing). We find our way to the kitchen and switch on the **electric light** and the **coffee pot**, which are made of either **glass** or **ceramics** (both glass and ceramics are manufactured entirely from industrial minerals — silica sand, limestone, talc, lithium, borates, soda ash, and feldspar). In the kitchen, we stand on **linoleum** (calcium carbonate, clay, and wollastonite) or on **ceramic tile**.



While the coffee is brewing, we sit down to read the **newspaper**. At the same time we realize we have to take a trip today, so we consult our **Official Airline Guide** and then have to refer to the **Yellow Pages** of the phone book for the number of the airline. (All of these papers are filled with kaolin clay and limestone; sodium sulfate, lime and soda ash are used in the processing.)

The coffee is ready and we have a piece of **toast** and sneak a piece of **cake** from last night's party (bakery items, such as bread, contain gypsum as an ingredient and **cake icing** has a high content of gypsum). The **plate** we are eating from is composed of **glass**, **ceramics**, or **China** (a special form of ceramics). We might want a full breakfast or contemplate what we will have for lunch or for the evening meal. Regardless, all of the food that we eat everyday is grown and produced completely with industrial minerals. (All **fertilizers** are composed of some combination of potash, phosphates, nitrogen, sulfur, and other minor minerals. The acidity of soils must be regulated with gypsum, limestone, or sulfur. In fact, without industrial minerals there could be no modern-day agriculture as we know it.)

Let's now start getting ready to go to work. We brush our teeth with **toothpaste** (calcium carbonate/limestone/sodium carbonate). Women put on **lipstick** (calcium carbonate and talc) and **powder** (talcum) and men might use **hair cream** (calcium carbonate). Other forms of **makeup** would have various minerals as a constituent. The **lavatory counter top** in the bathroom where we are standing is **synthetic marble** or **synthetic onyx** (titanium dioxide, calcium carbonate and alumina hydrate). **Sinks, lavatories, toilets**, and similar fixtures throughout the house are kept shiny with **cleansers** (silica, pumice, diatomite, feldspars, and limestone). **Kitchen and bathroom tiles** are installed and kept in place and maintain their waterproof condition with **putty** and **caulking compounds** (limestone and gypsum).

Before we leave we brighten up our wardrobe with some form of **jewelry** (all precious and semi-precious stones — opal, amethyst, aquamarine, topaz, garnets, diamonds — are industrial minerals). There is a less attractive task to do at the last minute, changing the **kitty litter** (attapulgit, montmorillonite, zeolites, diatomite, pumice, or volcanic ash).



As we walk outside, we make a mental note that the **composite roof** needs repairs. (**Fiberglass** is composed of almost the same ingredients as regular glass — silica, borates, limestone, soda ash, and feldspar. Fiberglass and asphalt, along with lesser quantities of either talc, silica sand, or limestone, comprise composition roofing.) And, we are pleased to see that the new **fiberglass siding** on our home looks nice. As we get in the car, we think of the **planting** and **gardening** projects for this evening. In addition to **fertilizers** we will have to buy some **soil amendments** and **planting mixes** today. (Vermiculite, perlite, gypsum, zeolites, or peat make for better growth.)

ON THE ROAD

Once we leave for work we are really immersed in industrial minerals. Our **automobile** is literally composed of industrial minerals. Starting from the ground up, **tires** contain clay and calcium carbonate and the **mag wheels** are made from dolomite and magnesium. All of the **glass** in the car is made entirely from minerals; so is the **fiberglass body** now on many models. Many components in a car are made of **composites**, which are usually combinations of **fiberglass** and **plastics**. Plastics are manufactured from calcium carbonate, wollastonite, mica, talc, clays, and silica. As we drive to work, we are enjoying numerous industrial minerals — from the **bumpers** to the dashboard to the **radiator cap** and the **floor mats**.

The **paint** that makes our car so attractive is composed of industrial minerals — titanium dioxide, kaolin clays, calcium carbonate, micas, talc, silica, wollastonite, and others. In fact, **all paints** that we will encounter today, from that on our house, to the stripe down the middle of the road, to the interior of our homes and offices, will be composed mainly of industrial minerals.



Modern transportation is almost entirely dependent upon industrial minerals and this does not stop with the car. **Gasoline** and **lubricants** depend on industrial minerals. The **drill bit** that was used originally to discover the crude oil was faced with **industrial diamonds**. **Fluids**, used for ease of well drilling, are almost entirely made from barite, bentonite, attapulgite, mica, and perlite. Clays and zeolites are necessary in the **catalytic cracking process** to produce gasoline and lubricants from crude petroleum.

On our way to work we are literally riding on industrial minerals. **Concrete pavement** is composed of **cement** and **aggregates**. Aggregates are themselves industrial minerals — sand and gravel or crushed stone, such as limestone, dolomite, granite, or lava. **Cement** is manufactured from limestone, gypsum, iron oxide, clays, and possibly pozzolan. Even **asphaltic pavement (blacktop)** contains industrial minerals as aggregates.

AT WORK

The **building** we are about to enter is made from or of industrial minerals. If it is a **concrete** or **stone** or **brick** building, it is made entirely from industrial minerals. If there are **steel structural members**, the steel production process required fluorspar for fluxing, bentonite for pelletizing, and perhaps chromite for hardening. The making of **steel** requires the use of high grade **refractory bricks** and **shapes** made from bauxite, chromite, zircon, silica, graphite, kyanite, andalusite, sillimanite, and clays. **Fiberglass batts** may be used for insulation in our office buildings, just as they are in our homes.

Upon entering the office building, we are often enclosed by **wallboard** or **sheet-**

rock (gypsum with fire retardant additives, such as clays, perlite, vermiculite, alumina hydrate, and borates) joined together with **joint cement** (gypsum, mica, clays, and calcium carbonates). Certainly the **plate glass windows** are made entirely from industrial minerals. The **floors** or **decks** between floors are probably made from concrete using **lightweight aggregate** (perlite, vermiculite, zeolites, or expanded shales).

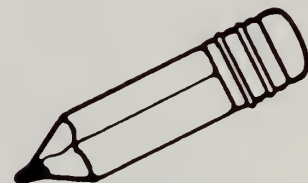
To begin our work, we may pick up a **pencil** (graphite and clays) and make a list of things to do. One of the first items is to send out a few invoices that are backed with **self-contained carbon paper** (bentonite or other clays or zeolites). There are some articles to be ordered so we pick up a **catalog** or **magazine** and unconsciously like the glossy feel of the **fine paper**, due to a high content of kaolin clay or calcium carbonate along with titanium dioxide for extreme whiteness. Almost every **sheet of paper** that we use today was made with industrial minerals such as talc, or contains minerals as fillers and coaters. Even some **inks** contain calcium carbonate or other fillers.

The morning has worn on and it is time for a break. In addition to the coffee in the **coffee cup** (remember it is made of industrial minerals), we decide to heat up a roll; and we place it in or on a **microwavable container** (plastics filled and reinforced with talc, calcium carbonate, titanium dioxide, or clays).

While on break, we ponder what we will do for recreation during the weekend. Recreational equipment — **golf clubs**, **tennis rackets**, **fishing rods**, and **skis** — are all now commonly made from graphite or, a slightly "older" material, fiberglass. If we are planning a backpacking trip, our **pack frame** and **pots** and **pans** will be made of **aluminum** (all aluminum, for whatever usage, originates with bauxite, one of the most widely utilized industrial minerals). If we use a camp light on our trip, the **mantle** will be made from an industrial mineral, thorium.

Communications equipment employs numerous industrial minerals. The standard product of the industry for many years has been the **silicon chip**, made from quartz or silica as the name implies. **Optical fibers**, made from **glass**, are replacing some copper wiring. The **television screen** or **computer monitor** is made of glass; but critical **tubes** also contain phosphors made from the rare

earths or lanthanides, a family of industrial minerals. Even the **superconducting materials**, now so much in the news, are manufactured from industrial minerals (yttrium, lanthanides, titanium, zirconium, and barite).



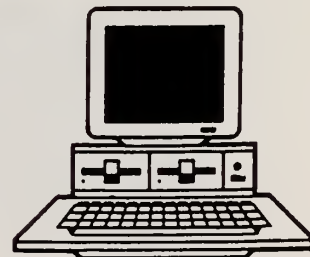
EVENING

After a hard day at the office, we drop in for refreshments with our friends. **Fruit juice** or, for the less temperate, a glass of wine or beer would be refreshing. All of these liquids are filtered through either perlite or diatomite in the purifying and clarifying processes. If we should add **sugar** to any of our drinks, we are enjoying the benefits of minerals since limestone and lime are basic to the production of sweeteners. And, of course, our refreshments will be served in **ceramic mugs** or **glasses** composed entirely of industrial minerals.

Filtering and purification are major uses of the industrial minerals. **Drinking water** is purified and clarified by filtering through minerals, (limestone, lime, and salt). In **waste water treatment** plants, zeolites, soda ash, lime, and salt are used in the filtering process.

Vegetable oils processing includes filtering through clays, perlite, or diatomite. Swimming pool water is filtered and purified by the same minerals.

When we arrive back home, we are not yet through with exposure to our mineral friends. If we take **medicine** or **pharmaceuticals**, we may chew **antacid pills** essentially made from calcium carbonate.



For **upset stomachs** there are Milk of Magnesia (**magnesia**/dolomite) or Ka-opectate (kaolin) and other medicines made from clays such as attapulgit. And, who can forget the lovely **barium** “**cocktail**” (barite), which is consumed before being x-rayed for gastrointestinal diagnosis. Then there is **tincture of iodine** (iodine) for all those cuts and bruises. The lithium that is used to treat **mental disorders** is an industrial mineral.

Rounding out the picture of diverse uses of minerals are: **abrasives** for **sandblasting**, **sandpaper** for home or workshop, **emery boards** for filing fingernails, and **polishing compounds** for our silverware and other items. Abrasives are made from pumice, diatomite, silica, garnet, corundum, and emery. Ornamental objects are also made from minerals: **porcelain figurines** (silica, limestone, borates, soda ash) for our what-not shelf and **plaster of paris statuettes** (gypsum) for our lawn.

IN SUMMARY

One of the most basic **table ingredients** is an industrial mineral, namely salt (sodium chloride). This substance is so basic that it was historically used as a medium of trade or payment as implied in the word “salary.” And, as a final use of minerals, an ode to our lives will be inscribed on **monumental stone** (marble or granite) in the form of an elegy. ✕

APPENDIX II

**MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAs
OF THE CALIFORNIA DESERT CONSERVATION AREA**

WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE			
				HIGH	MODERATE	LOW	UNDETERMINED
MACAFEE CREEK (202)	CDCA-100		U		Au, U, Th		SG, CR
NORTH TIP (202)	CDCA-100A				Au		U, Th, SG, CR
TOLER CREEK (202)	CDCA-101		U		Au, U		SG, CR, Th
NORTHWEST FISHLAKE VALLEY	CDCA-102				U, Th, SG, Mo, RE	Sn, Li, RE, U, Th, Au, Ag	
WHITE MOUNTAIN	CDCA-103		SG, Au		U, Th, SG, Au	Cu, Mo, W	
COTTONWOOD CREEK (202)	CDCA-104	SG	SG, Cu, W		SG, Pu, Au, Ag, Pb, Cu, W	Ag, U, Th	Mo, Zn, RE
WYMAN CREEK	CDCA-105		U, Th, W		W, SG		Cu, Mo, Pb, Zn, Li, Ag, U, Th, CR, SG, RE
ANTELOPE SPRING (202)	CDCA-107A						SG, MM
SYLVANIA MOUNTAINS	CDCA-111	Ag	W, Ag	Mo, Ag	W, Cu, Mo, Ag, Pb, RE	SG, Cl	B
LAST CHANCE MOUNTAIN	CDCA-112	S	Mo, Gy, S, Hg, B	Mo, S, Gy, Hg	Pb, Ag, W, Cu, Mo, RE	Pb, Ag, U, OG	B
PIPER MOUNTAIN	CDCA-115	Ls, Do, SG, Pu	Ls, Do, SG, Pu	Ls, Do	Mo, Cu, Pb, U, Th, SG, Pu		
SALINE VALLEY	CDCA-117	Pb, Ag	Au, Ag, Pb, Cu, W, U, S, Hg, Li, Mn, Mo, By, Na, K, B, Tc, SG, CR, Pu, Si, Fs	Au, Ag, Pb, Na, B, S, Gy, G, K, Tc, W, Mo, Wo, Po, U, Li, Hg, Sb	Au, Cu, W, Tc, Ag, Mo, Mn, U, Li, G, Zl, Hg, S, Gy, Sb	U, Tc, Cl, Pu, B, SG, Cl, CR, Au, Cu, Pb, Ag, Zn, Hg, Li, Zl	Cr, Si
LOWER SALINE VALLEY	CDCA-117A		Au, Ag, Cu, Pb, Zn, W, U	Pb, Au, G	Na, K, NM, Au, Ag, Cu, Pb, Zn, Mo, W, Tc		SG
NORTH DEATH VALLEY	CDCA-118			Mo		OG	Cu, Sn, RE, SG, Cl, NM, U, Th, MM, Na, K
LITTLE SAND SPRINGS	CDCA-119				Au, Ag	Li, K, Na, OG, SG, Cl, Pu, Cl, CR, U, Th, Au, Mo	Cl, U, Th, OG, SG, Do, Na, B, Ls, Fe

MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAS OF THE CALIFORNIA DESERT CONSERVATION AREA						
WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE		
				HIGH	MODERATE	LOW
WAUCOBA	CDCA-120		Pb, Cu, W, Au, Ag	Cu, W, Pb, Au, Ag	Pb, Cu, W, Mo, Zn, Au, Ag, SG	Tc
SALINE DUNES	CDCA-121		SG	G, Na, K	Na, K	NM, U, Th, OC
INYO MOUNTAINS	CDCA-122	Au, Ag, Tc, SG, Ls, Do	Tc, Au, Ag, Cu, Pb, Zn, W, Mo	Au, Ag, Pb, Tc, G, Na, K, B, Co, Ni, Pl, Mo, Cu	MM, Mo, Cu, Zn, RE, Co, Au, Ag, Pb, G	OG, W
HUNTER MOUNTAIN	CDCA-123	Wo	MM, U, Th, SG, Ag, Pb, Cu, W, Mo, Wo, Zn, Au, Si	Pb, Au, Wo, Cu, W, U, SG, Ag, Zn	Cu, SG, Pb, Zn, Ag, W, Au, U	Pb, Zn, Ag, W, Mo, Cu
CERRO GORDO PEAK	CDCA-124	SG	Au, Ag, Zn, Pb, Cu, Tc	Pb, Ag, Zn, Au, Tc, SG	Au, Pb, Ag, Zn	U, Do, Ls
PANAMINT DUNES	CDCA-127	Cl	Pb, Ag, Zn, Cu, SG, Au, Cl	Pb, Ag, Zn, Au, Cu, Cl	Pb, Ag, Zn, Ls	MM, U, Na, K, Pb, Ag, Zn, Si, Cu
NORTH COSO RANGE	CDCA-130		U, Cl, Pu, Cl, Fe, SG		U, Cl	CR, SG, Cl
COSO RANGE	CDCA-131	Cl	U, Fe, Pu, Cl, Cl		U, RE, Cl	Fe, Pu, Cl
GREAT FALLS BASIN	CDCA-132		RE	Ce, Nb, Y, La, Au, Pb, Sn	RE, G	SG, CR
DARWIN FALLS	CDCA-132A	SG	Cr, Co	Cu, Pb, Zn, Ag, SG		Cu, Pb, Ag, Zn, G
NORTH ARGUS RANGE	CDCA-132B		Pb, Zn, Cu, Au, Ag	Au, Ag, Pb, Zn, W, Cu	U, Au, Pb, Ag, Zn, Cu, Sb, Fe, Ls	G
WILDROSE CANYON	CDCA-134	SG	SG	SG, Cl	SG, Cl, OG, Na, K, G	Pb, Ag, Zn, Do, U, SG, Cl, B, W, Mo, Cu
SURPRISE CANYON	CDCA-136		Au, Ag, Pb, Cu, Zn, W, Mo, U	Au, Ag	W, Pb, Zn, Ag, Ba, Do, U, OG, Na, K, G, Cu, Cr	
MANLY PEAK	CDCA-137	Au	Au, Ag, Pb, Zn, Do	Au, Ag, Do	Pb, Zn, W, Au, Ag, Cu	MM

**MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAS
OF THE CALIFORNIA DESERT CONSERVATION AREA**

WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE			
				HIGH	MODERATE	LOW	UNDETERMINED
MIDDLE PARK CANYON	CDCA-137A	Au	Au, Ag, Zn, W, Pb, Cu	Au, Ag	Pb, Zn, W, Au, Ag, Na, K, Cu	Ls, Do	
SLATE RANGE	CDCA-142	SG	Au, Ag, Pb, Cu	Au, Ag, Pb, Cu, W, K, Na	Pb, Ag, Zn, G, Au, K, Na	U, Au, Ag, Pb, W, OG, Zl, SG, Cl, Ci, Pu, CR, Cu, Mo	Pe
FUNERAL MOUNTAINS	CDCA-143	Bent, SG	Bent, Tf	Bent, SG	Bent, Cl, Ls, Tf, Na, G, SG, OG, B, Zl, Do, Si	MM, Na, G	
RESTING SPRINGS RANGE	CDCA-145	Zl, B, Li	Pb, Ag, Zn, Au, B, Li, Zl, SG, Ls, Si, Cl	Na, Pb, Ag, Zn, Au, B, U, Th, G, SG, Zl	Pb, Cu, Au, Na, SG, Cl, OG	Cu, OG	Li
GREENWATER RANGE	CDCA-147		SG, Ba, Ag	B, SG	Cu, Ba, Tf, Th, Ls, OG, Na, SG, Ag, Pu	OG, Pu	U, Mo, Li
GREENWATER VALLEY	CDCA-148		Cu, Au, Ag, Pb, Zn, Ba		Cu, Ba, Na, OG, Ag	Au, Ag, Cu, Pb, Zn, B, OG	U
IBEX HILLS	CDCA-149	Tc	Cu, Ag, Pb, Au, Fe, Tc	Pb, Ag, Cu, Ba, Fe, Zn, Tc, Au, MM, G	Pe, Bent, Na, Zl, Pu	Na	
IBEX SPRING (202)	CDCA-149A		SG, G	Na, G	SG		
NOPAH RANGE	CDCA-150	Ag, Pb, Zn	Ls, Si, Do, Zl, SG, G	Zl, Pb, G, SG	Na, B, Bent, Zl, K, OG, Ls, Do, Si, Ag, Pb, Zn		
SOUTH NOPAH RANGE	CDCA-150A		Cu, Au, Ag, Pb, Zn	Pb, Ag, Zn, Ls, Do, Cu, Au	Na, K, G, OG, Do, SG	Ls, Do, Si	Tc, B, Na, G
PAHRUMP VALLEY	CDCA-154		Tc,		Ls, Do, Ag, Pb, Zn, Cu, OG, Si	Tc	
OWLSHEAD MOUNTAINS	CDCA-156		Mn, Fe	Mn, Fe	Pb, Zn, Ag, Cu, Au, Zl		U, Th
LITTLE LAKE CANYON	CDCA-157	W	W		W, G	W	
OWENS PEAK	CDCA-158	W, Au, Ag	W, Au, Ag	W	W, Au	Au, W, Pb, Cu, U	
COW HEAVEN	CDCA-159		NO DATA	NO DATA	NO DATA	NO DATA	NO DATA

MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAs OF THE CALIFORNIA DESERT CONSERVATION AREA						
WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE		
				HIGH	MODERATE	LOW
HORSE CANYON (202)	CDCA-160		NO DATA	NO DATA	NO DATA	NO DATA
KELSO PEAK	CDCA-160B		NO DATA			U
SKINNER PEAK (202)	CDCA-160C		U	NO DATA	NO DATA	U
FROG CREEK	CDCA-163		U	NO DATA	U	NO DATA
EL PASO MOUNTAIN	CDCA-164		Au, Cu, Pu, SG, Pe, CR	Au	Au, Ag, W, Cu	Pe, CR, Pu, SG
GOLDEN VALLEY	CDCA-170		Zl, Fs, Au, G	Au, Ag, G	Ag, Pb, Zn, , G	Na, Au, Ag
RED MOUNTAIN	CDCA-172		Au, Ag, Na, OG, K, G, W	Ag, Au, W, G	G	OG, Na, K
BLACKWATER WELL	CDCA-173		NO DATA	NO DATA	NO DATA	OG
GRASS VALLEY	CDCA-173A		NO DATA	NO DATA	NO DATA	NO DATA
BLACK MOUNTAIN	CDCA-186C		Zl, U, Js		Zl, OG, Sl, Js, A	U, Th, Zl, OG
NEWBERRY MOUNTAINS	CDCA-206	SG	Au, Ag, SG	Au, W, U, RG, SG	Fe, Ag, U, Au, Mn, SG, Na	Ag
KODMAN MOUNTAINS	CDCA-207		Ag, Au, Cu, Ba, SG		Ag, Au, W, Mo, U, Th, SG	Na, OG
BIGHORN MOUNTAINS	CDCA-217	SG	U, Th, SG, Au	G, SG	Th, G, Au	
MORONGO	CDCA-218		Ag, Cu, SG		Ag, Pb, W, Sn	MM, OG, Ag, Pb, W, U, Th, RE, G, SG, Sn, Au
WHITEWATER	CDCA-218A		Au, Ag		Ag, Au	MM, Ag, Au
SADDLE PEAK MOUNTAINS	CDCA-219		Tc, Cu, Ag, Au	Tc	G, Cu, Ag, Au	MM, SG, Na
SOUTH SADDLE PEAK MOUNTAIN	CDCA-220				G	Na
AWAWATZ MOUNTAINS	CDCA-221		NaCl, Gy, Sr, Tc, Ls	Na, Gy, Sr, Ag, SG, G, Fe	Cu, Pb, Ag, Ba, Do, Ls	Tc
SOUTH AWAWATZ MOUNTAINS	CDCA-221A	Fe	Fe, Ag, Au, Bent	Fe, Ag, Au, Bent		Na, U

WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE		
				HIGH	Moderate	LOW
KINGSTON RANGE	CDCA-222	Tc, Fe	Ag, Pb, Cu, Au, Tc, Gy, Zl, Bent, SG, Fe	Zl, Bent, Tc, Gy, Fe, Cu, Ag, SG	Pb, Zn, Ag, Cu, Fe, Ag, Au, Mo, W, Na, G	
SILURIAN VALLEY	CDCA-222A					Tc, Ls, Do, Sl, MM
NORTH MESQUITE MOUNTAINS	CDCA-223		Ba, Sl		Sl, Ls, Do, Ba	Au
MESQUITE MOUNTAINS	CDCA-225	Gy	Gy, Cu	Gy	Ls, Do, Sl, Gy, Pb, Zn, Ag	
STATELINE	CDCA-225A				Ls, Do, Pb, Ag, Zn	Ls, Do
CLARK MOUNTAINS	CDCA-227		Ls, Do, Au, Cu, Pb, Ag, Zn	Cu, Pb, Zn, Ag	Ag, Cu, Pb, Zn, Sl, Au, W, RE, IM	
HOLLOW HILLS	CDCA-228				Au, Ag, SG, U, Th	Au, Cu
SHADOW VALLEY	CDCA-235A		SG			G, SG
MAGEE/ATKINS	CDCA-237		Cl	Cl		G, SG
DEER SPRING (202)	CDCA-237A		NO DATA	NO DATA	NO DATA	NO DATA
VALLEY VIEW (202)	CDCA-237B		NO DATA	NO DATA	NO DATA	NO DATA
TEUTONIA PEAK (202)	CDCA-238A				Fl, Pb, Ag, Cu, Zn, G	U, Th, Au
CIMA DOME	CDCA-238B				Au, Cu, Pb, MM	G, U, Th
CINDER CONES	CDCA-239	Cl	Cl	Cl		G, U, Th
SODA MOUNTAINS	CDCA-242		Au, Cu, Ag, Fe, SG	Pb, Ag, Cu, Au, RG, SG	Ls, Au, Pb, Zn, Cu, Mo, Do, Sl, Cl, Fe	U, Tc, K
OLD DAD MOUNTAIN	CDCA-243		Fe, Ls, Cu	Fe, Cu, Au, Ag	Au, Fe, Ls, Cu, Pb	K, Na, OG, Zn
RAINBOW MOUNTAINS (RAINBOW WELLS)	CDCA-244		Cl	Cl	Au, Pb, Cu	W, G
EIGHT MILE TANK	CDCA-245		Cu, Pb, Au, W		Cu, Pb, Au, W	

CHEMERUEVI MOUNTAINS

CDCA-312	SC, BS, Ag, Pb, Cu	Au, Ag, Cu, Mn, Bl	Au, Ag, Cu, U, Mn, Bl, As, Mo	SG, DO
WHIPPLE MOUNTAINS				

**MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAS
OF THE CALIFORNIA DESERT CONSERVATION AREA**

WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE			
				HIGH	MODERATE	LOW	UNDETERMINED
KELSO MOUNTAIN	CDCA-249		U, Fe, Cu, Au		U, Th, Cu, Au, Si, Fe, Ls		
KELSO DUNES	CDCA-250		Fe, Au, Cu	Fe, Si, Fs	Au, Cu, Fe, Mn, W, Ba, Pe	Au, Cu, U	OG
CADY MOUNTAINS	CDCA-251		Si, Pu, Au, Pb, Fl, Mn	Mn	Au, Pb, Mn, Fl, Si, Pu	Mn, Na, OG	U, Sr
MESQUITE SPRING	CDCA-251A		Cu			G, OG, Na, K	
SLEEPING BEAUTY MOUNTAINS	CDCA-252		Ba, Mn, Na	Mn, Ba	Na, Mn, G, SG, Ba		
GRANITE MOUNTAINS	CDCA-256		Fe, Cu, Pb, Ag, Pe, U	Pe, SG	Au, Cu, Ag, Zn, Pb, Fe	Fe, Ag, Cu, Pb, Zn, W, Pe, U	LS, G
LAVA HILLS	CDCA-258		Cu, SG	Cl, Au	Cu, Au, W	SG, W	G
SOUTH BRISTOL MOUNTAINS	CDCA-258A		Ls		Ls	U, Fe, Cu	Au, G, Th
MARBLE MOUNTAINS	CDCA-259		Ls, Au, Cu, Ag, Ls, BS, Bent	Ls, BS, Bent	Fe, Au, Cu, Ag	NM, Ls, Bent	U
CLIPPER MOUNTAINS	CDCA-260		Pu, W, Au, Ag, Mn, Fe, Ls	W, Mn, Fe, Au, Ag, Ls	W, Au, Cu, Pb, Zn, U		Pu
SOUTH PROVIDENCE MOUNTAINS	CDCA-262	Au	Au, Ag, Cu, Pb, Fe, Fl	Au, Cu, Pb, Ag, Fl	Au, Cu, Pb, Ag, Fl, SG		
NORTH PROVIDENCE MOUNTAINS	CDCA-263	Fe, Au, Ag, Ls, Do, SG, BS	Au, Cu, U, Pb, W, Ag, Ls, Do, SG, BS	Au, Ag, Pb, Zn, Fe, W, LS	Au, Ag, Pb, Zn, Fe, Mo, W, OG		
MID HILLS	CDCA-264		Au, Ag, Cu, Pb, Mo		Au, Ag, Cu, Pb, Mo		
NEW YORK MOUNTAINS	CDCA-265	Ls, Mo	Ls, W, Mo, Cu, Pb, Au, Ag, Zn	Au, Ag, Cu, Ls, Cu, Zn	Au, Ag, Mo, Cu, Pb, W		
CASTLE PEAKS	CDCA-266		Fl, Au, Ag, Cu, Pb, RE, U, Th	Au, Ag	Ag, Pb, Fl, Au, OG, U		Cu, Pb, U, Th
FORT PIUTE	CDCA-267		Pe, Cl, Au	Au	Cl, Pe, Au	U, Th, Au	

MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAs OF THE CALIFORNIA DESERT CONSERVATION AREA									
WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE					
				HIGH	MODERATE	LOW	UNDETERMINED		
NORTH ALGODONES DUNES	CDCA-360		SG	SG, OG	OG, G				
SOUTH ALGODONES DUNES	CDCA-362		SG	G	SG	OG			
JACUMBA	CDCA-368	Ls	Ls, W, Ge	Ls, SG	W, Ls, Pb, Zn	W		Ge	
FISH CREEK MOUNTAINS	CDCA-372	Gy	Gy, SG	Gy, Ls	G, Pb, Mo, W, SG				
COYOTE MOUNTAINS	CDCA-373		Gy, Ls, Cu, S, Mn, W, SI, Cl, NI, RG	Gy, Mn, W, SI, Ls, Cl, Ag, S	Cu, NI, RG	OG			

**MINERAL RESOURCES, OCCURRENCES AND POTENTIALS FOR WSAS
OF THE CALIFORNIA DESERT CONSERVATION AREA**

WSA NAME	WSA NUMBER	KNOWN MINERAL RESOURCE	KNOWN MINERAL OCCURRENCE	POTENTIAL FOR MINERAL OCCURRENCE			
				HIGH	MODERATE	LOW	UNDETERMINED
BIG MARIA MOUNTAINS	CDCA-321		Ag, Au, Cu, Mn, Ls, Wo, Mo, Pb, Zn, Fe	Au, Ag, Cu, Mn, Ls, Gy, Mo, Fe, Ls, BS, Wo, Ma	U, Th, Mn, Au, Pb, Zn, Fe, Ag, Mo, Ls, Si, Gy, Cu		
RICE VALLEY	CDCA-322		Wo, Gy, Ls	Ls, Wo, Gy, RS, Ag, Pb, Cu, Zn	W	OG, SG	
PALEN/MCCOY	CDCA-325		Cu, Ag, Au, Mn, Pb, Gy, Fl	Ag, Cu, Au, Pb, Gy, Fl, Mn, G, U, Th, Tc, Fe, Pr	G, U, SG, BS, Mn, Ls, Mo, Cr, G, Na, K, Th		
COXCOMB MOUNTAINS	CDCA-328			Ba, Au, Ag	Au, Ag, Cu, Pb, W, Mo, Fe		
EAGLE MOUNTAINS	CDCA-334		SG	Au, Ag, W	Au, Ag, W, Mo	U, Th, SG	
PINTO BASIN (202)	CDCA-334A		Cu		Cu, Au, Pb		
PINTO MOUNTAINS	CDCA-335		Y, Ce, Mz	Au	Ls, U, Th, RE, Y, Ce, Au, DS		
SANTA ROSA MOUNTAINS	CDCA-341		Au, W, Ls, G, SG	W, Ls	Au, G, W, Ag		Be, Bi, Cu, Mo, Sn, Zn
MECCA HILLS	CDCA-343		SG	Cl, SG	G, Cl	OG	
OROCOFIA MOUNTAINS	CDCA-344		Mn, Au, Fl, Sn, Pb, Mo, B	Au, Fl	Pb, Zn, B, Gy, G	OG-	Sn, Mn, Mo
CHUCKWALLA MOUNTAINS	CDCA-348		Ag, Cu, Pb, Au, Zn, Th, W, Mo, SG, BS	Au, Ag, W, Mo	Au, Ag, W, Mo	Cu, Pb, Sn, Th, Ag, Au,	Ba, B, Be, Ce, Cr, Co, Fe, La, Li, Mn, Nb, Sr, Ti, V, Y, Zr
LITTLE CHUCKWALLA MOUNTAINS	CDCA-350	Pe	RE, Cr, Au	Pe	Au, Cr, RE	MM	
PALO VERDE MOUNTAINS	CDCA-352		Mn, Ba, Au, Hg, Fe, Ge	Ge, Au	Hg, Ba, Mn, Fe		Ba, U
INDIAN PASS	CDCA-355		Ge, Cu, Ag	Cu, Au, Ge, Mn	Ag, W, Au		
PICHACHO PEAK	CDCA-355A		Cu, U, Cl, Au, Ag	Au, Ag, Ge	Au, Ag		Cu, U, Cl
LITTLE PICHACHO PEAK	CDCA-356		SG, Au, Ag, Pb, Cu	SG, Au, Cu, Pb, Ag, W	Au, Ag	OG	

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ABBREVIATIONS USED

Ac	: ACTINOLITE	Mo	: MOLYBDENUM
A	: AGATE	Me	: MONTMORILLONITE
Sb	: ANTIMONY	Mz	: MONAZITE
As	: ARSENIC	Ni	: NICKLE
Ba	: BARITE	Nb	: NOBIUM
Ba	: BARIUM	Nm	: NON-METALLIC
Bent	: BENTONITE	Og	: OIL AND GAS
Be	: BERYL	Ge	: ONYX
Be	: BERYLLIUM	Op	: OPAL
Bi	: BISMUTH	o	: ORE
B	: BORATES	OS	: ORNAMENTAL STONE
B	: BORON	PM	: PALEOZOIC MARINE ROCKS
BS	: BUILDING STONE	Pe	: PERLITE
Ca	: CALCIUM	Ph	: PHOSPHATE
Ce	: CERIUM	Pl	: PLATINUM
Cr	: CHRONIUM	K	: POTASSIUM
Cl	: CINDERS	Po	: POZZOLAN
Cl	: CLAY	Pu	: PUMICE
Co	: COBALT	Pr	: PYROPHILITE
Cu	: COPPER	Si	: QUARTZ SAND
CR	: CRUSHED ROCK	U	: RADIOACTIVE RESOURCES
DS	: DIMENSION STONE	RE	: RARE EARTH
d	: DISMINATED	SG	: RIP-RAP
Do	: DOLOMITE	RS	: ROCK AND STONE
DR	: DRIFTWOOD ROCK	RG	: ROFFING GRANULES
Fs	: FELDSPAR	Na	: SALT
Fl	: FLUROITE	SG	: SAND AND GRAVEL
Ga	: GARNET	Cl	: SEPIOLITE
Ge	: GEMS	Si	: SILICA
G	: GEOTHERMAL	Ag	: SILVER
SG	: GLASS SAND	Na	: SODIUM
Au	: GOLD	Fl	: SPAR
Gy	: GYPSUM	Sr	: STRONTIUM
NaCl	: HALITE	S	: SULFUR
Cl	: HECTORITE CLAY	Tc	: TALC
IM	: INDUSTRIAL MINERALS	Th	: THORIUM
CR	: INDUSTRIAL ROCK	Sn	: TIN
Fe	: IRON	Tf	: TUFA
Ja	: JADE	W	: TUNGSTEN
Js	: JASPER	UM	: UNKNOWN MATERIALS
La	: LANTHANUM	U	: URANIUM
Pb	: LEAD	V	: VANADIUM
LS	: LIMESTONE	v	: VEIN
Li	: LITHIUM	Cl	: VOLCANIC CINDERS
Mg	: MAGNESIUM	Wo	: WOLLASTONITE
Mn	: MANGANESE	Y	: YTTRIUM
Ma	: MARBLE	Zl	: ZEOLITES
Hg	: MERCURY	Zn	: ZINC
NM	: METALLIC MINERALS(OTHER THAN Au AND Ag)	Zr	: ZIRCONIUM
Ls	: MINERAL WHITING(CALCIUM CARBONATE)		

CLAIM DATA FOR WILDERNESS STUDY AREAS

WILDERNESS STUDY AREA	WSA NUMBER	SUITABLE				NONSUITABLE			
		LODE	PLACER	MILLSITE	CLAIMS	LODE	PLACER	MILLSITE	CLAIMS
					TOTAL				TOTAL
					ACRES				ACRES
DEAD MOUNTAINS N. AD.	AZ-050-001	0	0	0	0	0	0	0	0
DEAD MOUNTAINS S. AD.	AZ-050-002	0	0	0	0	0	0	0	0
CHEMEHUEVI MOUNTAINS AD.	AZ-050-003	0	0	0	0	0	0	0	0
CHEMEHUEVI/NEEDLES AD.	AZ-050-004	0	0	0	0	0	0	0	0
WHIPPLE MOUNTAINS AD.	AZ-050-010	9	0	0	9	0	0	0	0
BIG MARIA MOUNTAINS N. AD.	AZ-050-018	0	0	0	0	0	0	0	0
BIG MARIA MOUNTAINS S. AD.	AZ-050-019	0	0	0	0	0	0	0	0
LITTLE PICHACO FEAR AD.	AZ-050-035	0	0	0	0	29	0	0	29
GARCIA MOUNTAIN (202)	CA-010-012	0	0	0	0	0	0	0	0
SHEEP RIDGE (202)	CA-010-022	0	0	0	0	0	0	0	0
MILK RANCH/CASE MOUNTAIN (202)	CA-010-023	0	0	0	0	0	0	0	0
OWENS PEAK	CA-010-026	7	2	0	9	1	7	0	8
SACATAR MEADOWS	CA-010-027	0	0	0	0	0	0	0	0
ROCKHOUSE (202)	CA-010-029	0	0	0	0	0	0	0	0
DOMELAND (202)	CA-010-032	0	0	0	0	0	0	0	0
CALIENTE MOUNTAIN	CA-010-042	0	0	0	0	0	0	0	0
PIUTE CYPRESS ISA	CA-010-046	0	0	0	0	11	3	0	15
CERRO GORDO	CA-010-055	0	0	0	0	20	9	0	29
SOUTHERN INYO	CA-010-056	38	4	0	42	36	4	4	44
INDEPENDENCE CREEK	CA-010-057	0	0	0	0	0	0	0	0
CRATER MOUNTAIN	CA-010-062	0	0	0	0	17	20	1	38
SYMES CREEK	CA-010-064	0	0	0	0	0	0	0	0
CHIDAGO CANYON	CA-010-079	0	0	0	0	0	0	0	0
FISH SLOUGH	CA-010-080	0	0	0	0	0	0	0	0
VOLCANIC TABLELAND	CA-010-081	0	0	0	0	0	0	0	0
CASA DIABLO	CA-010-082	0	0	0	0	36	0	0	36
EXCELSIOR	CA-010-088	0	0	0	0	0	0	0	0
GRANITE MOUNTAINS	CA-010-090	0	0	0	0	5	0	0	5
WOLFORD SPRINGS	CA-010-092	0	0	0	0	0	0	0	0
MORMAN MEADOW	CA-010-094	0	0	0	0	20	3	1	24
MOUNT BIEDEMAN	CA-010-095	0	0	0	0	30	0	0	30
BODIE MOUNTAINS	CA-010-099	0	0	0	0	300	5	0	305
BODIE	CA-010-100	0	0	0	0	353	1	2	356
MASONIC MOUNTAINS	CA-010-102	0	0	0	0	9	0	0	9
SLINKARD	CA-010-105	0	0	0	0	0	0	0	0
MACHESNA (202)	CA-010-108	0	0	0	0	0	0	0	0
PIT RIVER CANYON	CA-020-103	0	0	0	0	0	0	0	0
TULE MOUNTAIN	CA-020-211	0	0	0	0	0	0	0	0
TUNNISON MOUNTAIN	CA-020-311	0	0	0	0	0	0	0	0
BITTERBRUSH	CA-020-604	0	0	0	0	0	0	0	0
FIVE SPRINGS	CA-020-609	0	0	0	0	0	0	0	0
SKEDADDLE	CA-020-612	0	5	0	5	0	0	0	0
DRY VALLEY RIM	CA-020-615	0	0	0	0	0	0	0	0
TWIN PEAKS	CA-020-619A	0	0	0	0	0	0	0	0
SOUTH WARNER CONTIGUOUS (202)	CA-020-708	0	0	0	0	0	0	0	0
TIMBERED CRATER	CA-030-201	0	0	0	0	0	0	0	0
LAVA	CA-030-203	0	0	0	0	0	1	0	1
YOLLA BOLLY (202)	CA-030-501	0	0	0	0	0	0	0	0
MERCED RIVER	CA-040-203	0	0	0	0	57	102	7	166
PANOCHIE HILLS NORTH	CA-040-301A	0	0	0	0	2	0	0	2
PANOCHIE HILLS SOUTH	CA-040-301B	0	0	0	0	0	0	0	0
PINNACLES CONTIGUOUS (202)	CA-040-303	0	0	0	0	0	0	0	0
VENTANA CONTIGUOUS (202)	CA-040-308	0	0	0	0	0	0	0	0
CHEMISE MOUNTAIN ISA	CA-050-111	0	0	0	0	0	0	0	0
KING RANGE	CA-050-112	0	0	0	0	0	0	0	0
RED MOUNTAIN	CA-050-132	0	0	0	0	28	29	0	57
BIG BUTTE (202)	CA-050-211	0	0	0	0	0	0	0	0

APPENDIX III

WILDERNESS STUDY AREA	WSA NUMBER	SUITABLE					NONSUITABLE				
		LODE	PLACER	MILLSITE	CLAIMS	TOTAL	LODE	PLACER	MILLSITE	CLAIMS	TOTAL
						ACRES					ACRES
THATCHER RIDGE	CA-050-212	0	0	0	0	0	0	0	0	0	0
EDEN VALLEY/MIDDLE FORK EEL RIV	CA-050-214	0	0	0	0	0	0	0	0	0	0
ROCKY CREEK/CACHE CREEK	CA-050-317	0	0	0	0	0	550	2	6	558	11110
CEDAR ROUGHS	CA-050-331	0	0	0	0	0	0	0	0	0	0
AGUA TIBIA (202)	CA-060-002	0	0	0	0	0	0	0	0	0	0
BEAUTY MOUNTAIN	CA-060-020G	0	0	0	0	0	11	0	0	11	220
CA YSIDRO MOUNTAIN (202)	CA-060-022	0	0	0	0	0	11	3	0	14	340
SAN FELIPE HILLS	CA-060-023	0	0	0	0	0	0	0	0	0	0
SAWTOOTH MOUNTAINS A (202)	CA-060-024A	0	0	0	0	0	0	0	0	0	0
SAWTOOTH MOUNTAINS B	CA-060-024B	0	0	0	0	0	0	0	0	0	0
SAWTOOTH MOUNTAINS C (202)	CA-060-024C	0	0	0	0	0	0	0	0	0	0
CARRIZO GORGE	CA-060-025A	0	0	0	0	0	0	0	0	0	0
TABLE MOUNTAIN (202)	CA-060-026	0	0	0	0	0	0	0	0	0	0
HAUSER MOUNTAIN	CA-060-027C	0	0	0	0	0	0	0	0	0	0
WESTERN OTAY MOUNTAIN	CA-060-028	0	0	0	0	0	0	0	0	0	0
SOUTHERN OTAY MOUNTAIN	CA-060-029	2	7	0	9	320	0	0	0	0	0
MACAFEE CREEK (202)	CDCA-100	0	0	0	0	0	0	0	0	0	0
NORTH TIP (202)	CDCA-100A	0	0	0	0	0	0	0	0	0	0
TOLER CREEK (202)	CDCA-101	0	0	0	0	0	0	0	0	0	0
NORTHWEST FISHLAKE VALLEY	CDCA-102	0	0	0	0	0	0	0	0	0	0
WHITE MOUNTAIN	CDCA-103	0	0	0	0	0	57	6	1	63	1380
COTTONWOOD CREEK (202)	CDCA-104	0	0	0	0	0	53	4	0	57	1220
WYMAN CREEK	CDCA-105	0	0	0	0	0	26	0	13	39	585
ANTELOPE SPRING (202)	CDCA-107A	0	0	0	0	0	8	0	0	0	0
SYLVANIA MOUNTAINS	CDCA-111	0	0	0	0	0	249	2	0	251	175
LAST CHANCE MOUNTAIN	CDCA-112	0	0	0	0	0	62	29	10	251	5060
PIPER MOUNTAIN	CDCA-115	223	187	8	418	11980	0	0	0	101	2450
SALINE VALLEY	CDCA-117	1	0	0	1	20	0	0	0	2	80
LOWER SALINE VALLEY	CDCA-117A	0	0	0	0	0	0	0	0	0	0
NORTH DEATH VALLEY	CDCA-118	0	0	0	0	0	49	4	5	58	1165
LITTLE SAND SPRINGS	CDCA-119	178	4	0	182	3720	0	0	0	0	0
WAUCOBA	CDCA-120	0	0	0	0	0	42	9	2	53	1210
SALINE DUNES	CDCA-121	0	0	0	0	0	1	32	3	36	1315
INYO MOUNTAINS	CDCA-122	102	2	3	107	2135	29	7	0	36	860
HUNTER MOUNTAIN	CDCA-123	10	59	1	70	2565	26	7	2	35	810
CERRO GORDO PEAK	CDCA-124	0	0	0	0	0	422	0	1	423	8445
FANAMINT DUNES	CDCA-127	11	27	0	38	1300	1	1	0	2	60
NORTH COSO RANGE	CDCA-130	0	0	0	0	0	8	0	0	8	160
COSO RANGE	CDCA-131	0	0	0	0	0	264	1	0	265	5320
GREAT FALLS BASIN	CDCA-132	0	0	0	0	0	13	1	0	14	300
DARWIN FALLS	CDCA-132A	0	0	0	0	0	7	0	0	7	140
NORTH ARGUS RANGE	CDCA-132B	0	0	0	0	0	57	3	1	61	1265
WILDROSE CANYON	CDCA-134	0	0	0	0	0	2	0	0	2	40
SURPRISE CANYON	CDCA-136	0	0	0	0	0	195	3	14	212	4090
MANLY PEAK	CDCA-137	0	0	0	0	0	72	7	8	87	1760
MIDDLE PARK CANYON	CDCA-137A	0	0	0	0	0	157	12	7	176	3655
SLATE RANGE	CDCA-142	0	0	0	0	0	174	1	5	180	3545
FUNERAL MOUNTAINS	CDCA-143	3	2	0	5	140	15	2	0	17	380
RESTING SPRINGS RANGE	CDCA-145	0	0	0	0	0	110	122	6	238	7110
GREENWATER RANGE	CDCA-147	0	0	0	0	0	465	22	1	488	10185
GREENWATER VALLEY	CDCA-148	12	0	0	12	240	9	0	0	9	180
IBEX HILLS	CDCA-149	0	0	0	0	0	36	1	0	37	760
IBEX SPRING (202)	CDCA-149A	0	0	0	0	0	0	0	0	0	0
NOPAH RANGE	CDCA-150	1	0	0	1	20	42	56	2	100	3090
SOUTH NOPAH RANGE	CDCA-150A	0	0	0	0	0	12	15	0	27	840
FAHRUMP VALLEY	CDCA-154	0	0	0	0	0	4	3	0	7	200
OWLSHEAD MOUNTAINS	CDCA-156	4	19	1	24	845	0	0	0	0	0
LITTLE LAKE CANYON	CDCA-157	0	0	0	0	0	0	0	0	0	0
OWENS PEAK	CDCA-158	11	1	1	13	265	6	18	0	24	840

WILDERNESS STUDY AREA	WSA NUMBER	SUITABLE					NONSUITABLE				
		LODE	PLACER	MILLSITE	CLAIMS	ACRES	LODE	PLACER	MILLSITE	CLAIMS	ACRES
ESSEX	CDCA-288A	0	0	0	0	0	36	0	0	0	720
BIGELOW CHOLLA GARDEN	CDCA-290	0	0	0	0	0	0	0	0	0	0
SACRAMENTO MOUNTAINS	CDCA-292	0	0	0	0	0	129	0	0	0	2580
STEPLADDER MOUNTAINS	CDCA-294	0	0	0	0	0	24	28	0	0	52
PILOT PEAK	CDCA-295	0	0	0	0	0	62	0	0	0	1600
OLD WOMEN MOUNTAINS	CDCA-299	0	0	0	0	0	67	5	0	0	62
SHIP MOUNTAINS	CDCA-300	0	0	0	0	0	11	4	0	0	72
CLEGHORN LAKES	CDCA-304	0	0	0	0	0	1	0	0	0	15
AMBOY CRATER	CDCA-304A	0	0	0	0	0	0	12	0	0	20
SHEEPHOLE/CADIZ	CDCA-305	0	0	0	0	0	8	83	0	0	480
TURTLE MOUNTAIN	CDCA-307	22	0	0	0	440	20	58	2	0	91
CHEMEHUEVI MOUNTAINS	CDCA-310	0	0	0	0	0	0	0	0	0	3480
WHIPPLE MOUNTAINS	CDCA-312	120	2	0	0	2480	0	16	0	0	2730
BIG MARIA MOUNTAINS	CDCA-321	0	0	0	0	0	655	28	0	0	16
RICE VALLEY	CDCA-322	0	0	0	0	0	124	232	0	0	640
FALEN/MCCOY	CDCA-325	24	0	0	0	480	0	0	0	0	683
COXCOMB MOUNTAINS	CDCA-328	8	66	1	0	2805	0	14	0	0	356
EAGLE MOUNTAINS	CDCA-334	4	0	0	0	80	61	0	28	0	14
PINTO BASIN (202)	CDCA-334A	0	0	0	0	0	2	0	0	0	560
PINTO MOUNTAINS	CDCA-335	0	0	0	0	0	8	0	0	0	89
SANTA ROSA MOUNTAINS	CDCA-341	0	0	0	0	0	0	0	0	0	1360
MECCA HILLS	CDCA-343	0	0	0	0	0	0	0	0	0	2
OROCOPIA MOUNTAINS	CDCA-344	398	0	0	0	7960	0	21	0	0	160
CHUCKWALLA MOUNTAINS	CDCA-348	55	17	1	0	1785	120	45	0	0	840
LITTLE CHUCKWALLA MOUNTAINS	CDCA-350	0	0	0	0	0	84	0	1	0	2400
PALO VERDE MOUNTAINS	CDCA-352	0	0	0	0	0	76	7	0	0	130
INDIAN PASS	CDCA-355	224	8	1	0	4805	36	6	0	0	83
PICHACHO PEAK	CDCA-355A	208	14	0	0	4720	31	1	0	0	1800
LITTLE PICHACHO PEAK	CDCA-356	0	0	0	0	0	81	3	0	0	32
NORTH ALGODONES DUNES	CDCA-360	20	0	0	0	400	609	9	0	0	84
SOUTH ALGODONES DUNES	CDCA-362	0	0	0	0	0	0	0	0	0	12540
JACUMBA	CDCA-368	23	0	0	0	460	0	10	0	0	618
FISH CREEK MOUNTAINS	CDCA-372	0	20	1	0	805	3	0	0	0	10
COYOTE MOUNTAINS	CDCA-373	0	0	0	0	0	2	0	0	0	400
CARSON ICEBERG (202)	NV-030-531	0	0	0	0	0	29	17	0	0	60
TOTAL		2276	1439	18	3733	103170	9662	3351	180	0	46
											1260
											328180

**ESTIMATED COST OF EXAMINATION OF MINING CLAIMS
IN CALIFORNIA WSAS**

Examination of mining claims may involve one or more of the following actions. Total costs involved are dependent upon BLM findings and claimant action, such as an appeal.

MINING CLAIM EXAMINATION ACTIONS			
ACTION	INITIATOR	INITIATING REASON	ESTIMATED BLM COST
LOCKE DECISION			
Administrative decision	BLM	Non-filing of affidavits by claimant of annual assessment work	\$100/claim group
If appealed	Claimant	Adverse BLM decision	\$200/appeal ¹
VALID EXISTING RIGHTS (VER) DETERMINATION			
Mineral Exam	BLM	Claimant files a plan of operations to conduct mining related activities within a WSA.	\$13,700/claim group ²
Contest	BLM	BLM determines that claimant does not have VER.	\$2220/contest ³
MINERAL PATENT			
Administrative Procedures, Mineral exam and Patent issuance.	Claimant	Claimant applies for patent in WSA.	\$17,300 ⁴
Contest	BLM	BLM determines that claimant does not have VER.	\$2220/contest ⁵

¹ Locke Decisions (United States v. Locke, 471 U.S. 84 (1985)) are appealed to IBLA. Cost shown reflects BLM administrative costs but does not include IBLA costs.

² Represents minimum complexity VER (costs can increase substantially if case is complex). Field operations within a designated wilderness area could require special transportation needs such as helicopter or horses at additional cost. Cost estimate includes:

Environmental assessment of plan of operations and VER procedures	15 days
Mineral exam preparation (literature search, equipment prep., etc.)	5 days
Field mineral exam (2 people, 7 days each)	14 days
Report preparation (includes illustration and manuscript review)	30 days
Technical review, corrections and approval	2 days

³ Estimated average costs including administrative adjudication costs, hearing preparation and testimony by mineral examiner (5 days), and closing file. Does not include cost of attorney's representing government nor any IBLA costs.

⁴ Does not include fees charged claimant, such as application fee, mineral survey, etc. Field operations within a designated wilderness area could require special transportation needs such as helicopter or horses at additional cost.

⁵ Estimated average costs including administrative adjudication costs, hearing preparation and testimony by mineral examiner (5 days), and closing file. Does not include cost of attorney's representing government nor any IBLA costs.

APPENDIX IV

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
AGGREGATE PRODUCTS PIT	AGGREGATE PRODUCTS COMPANY	SAND AND GRAVEL (BASE)	
ANDRE ROAD PIT	UDCO, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
EAST HIGHLINE PIT #1	ALL AMERICAN AGGREGATES	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
ELMS PIT	ELMS EQUIPMENT RENTAL	SAND AND GRAVEL (BASE)	
FRINK PIT (NILAND ROCK PIT)	IMPERIAL REDI-MIX	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
FRINK PIT	DESERT GRAVEL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GLAMIS PIT	ALL AMERICAN AGGREGATES	SAND AND GRAVEL (BASE)	
HOLTVILLE #1 PIT	DESERT GRAVEL COMPANY	SAND AND GRAVEL (P.C.C.)	
HOLTVILLE #2 PIT	DESERT GRAVEL COMPANY	SAND AND GRAVEL (BASE)	
MASTERS BORROW PIT	MASTERS CONSTRUCTION	STONE (FILL)	
MESQUITE MINE	GOLD FIELDS OPERATING COMPANY	GOLD (LODE)	SILVER (LODE)
OCOTILLO PIT	MEALEY CONSTRUCTION COMPANY	SAND AND GRAVEL (BASE)	
OCOTILLO PIT	IMPERIAL REDI-MIX	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
PADRE-MADRE MINE	AMERICAN GIRL MINING CORP.	GOLD (LODE)	SILVER (LODE)
PICACHO MINE	CHEMGOLD, INC.	GOLD (LODE)	SILVER (LODE)
PICACHO PEAK PROJECT (CHRISTIE GOLD MINE)	CHRISTIE GOLD, LTD.	GOLD (LODE)	SILVER (LODE)
PLASTER CITY QUARRY	UNITED STATES GYPSUM COMPANY	GYPSUM	
SHELL CANYON PIT (FOSSIL CANYON PIT)	VAL-ROCK, INC.	SAND AND GRAVEL (BASE)	
SHOVELER-ANNEX QUARRY	CALMAT COMPANY (CEMENT DIVISION)	GYPSUM	
TIERRA PIT	TIERRA TILE	SAND AND GRAVEL (BASE)	
WHEELER ROAD PIT	UDCO, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
WONDERSTONE ROCK PIT	IMPERIAL REDI-MIX	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
ADAMS PIT	HIATTS SAND AND GRAVEL COMPANY	SAND AND GRAVEL (BASE)	
AMERICAN PERLITE PIT	AMERICAN PERLITE COMPANY	PERLITE	
ASH MEADOWS PIT	EAST-WEST MINERALS, INC.	ZEOLITES	
BRIGGS MINE	PRUETT, DAVID	GOLD (LODE)	SILVER (LODE)
COSO PIT (BATTLE MOUNTAIN MINE)	CALIFORNIA LIGHTWEIGHT PUMICE, INC.	PUMICE	
CRYSTAL SPRINGS TALC MINE	CARTER, BILLY E.	TALC	
FIVE BRIDGES PIT (NIKOLAUS PIT)	NIKOLAUS AND NIKOLAUS, INC.	SAND AND GRAVEL (BASE)	
GERSTLEY MINE	U.S. BORAX AND CHEMICAL CORP.	BORATES	
HAIWEE QUARRY (OCLITE QUARRY)	PACIFIC NATURAL AGGREGATE COMPANY	PUMICE	
J.O. CLAIMS	INYO MINERALS	WOLLASTONITE	
KEYSTONE MINE	KEYSTONE MINING COMPANY	GOLD (LODE)	SILVER (LODE)
LONE PINE PIT	LONE PINE SAND AND GRAVEL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
MARGIE #1 THRU #60	CALIFORNIA LIGHTWEIGHT PUMICE, INC.	PUMICE	
OWENS LAKE MINE	LAKE MINERALS CORP.	SODIUM COMPOUNDS	

APPENDIX V

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)
from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
PINE CREEK MINE	U.S. TUNGSTEN CORP., DIV. STRATCOR	TUNGSTEN	MOLYBDENUM
RED HILL CINDER PIT	TWIN MOUNTAIN ROCK COMPANY	CINDERS (BASE)	DECORATIVE ROCK (CINDERS)
SIDEHILL MINE	R.T. VANDERBILT COMPANY, INC.	CLAY (BENTONITE)	
SNOWCAPS MINE	SUNSHINE MINING COMPANY	GOLD (LODE)	SILVER (LODE)
WHITE EAGLE MINE	OKUNIEWICZ MINING COMPANY	TALC	
WHITE OUARRY (INYO MARBLE QUARRY)	INYO MARBLE COMPANY	LIMESTONE (OTHER USES)	
107 LIMESTONE QUARRY	NATIONAL CEMENT CO. OF CALIFORNIA, INC.	LIMESTONE (FOR CEMENT)	
107 SHALE OUARRY	NATIONAL CEMENT CO. OF CALIFORNIA, INC.	SHALE (FOR CEMENT)	
ARVIN PIT	GRANITE CONSTRUCTION COMPANY	SAND AND GRAVEL (P.C.C.)	
BARRETT PIT	BARRETT, L.G.	SAND AND GRAVEL (BASE)	
BERTRAND SAND PIT	BERTRAND, GEORGE JR.	SAND AND GRAVEL (BASE)	
BIG ROCK PIT	OILDALE READY MIX	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BOWMAN ROAD PIT	ASPHALT CONSTRUCTION COMPANY, INC.	SAND AND GRAVEL (BASE)	
CACTUS MINE (BLUE EAGLE MINE)	CACTUS GOLD MINES COMPANY	GOLD (LODE)	SILVER (LODE)
CALCITE OUARRY	CALMAT COMPANY (CEMENT DIVISION)	LIMESTONE (FOR CEMENT)	
CAJENTE PIT	CAJENTE SAND AND GRAVEL COMPANY	SAND AND GRAVEL (S.B.)	
CANEBRAKE CREEK PIT (LADD PIT)	LADD, LEROY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CHEVRON PIT	CHEVRON USA, INC.	SAND AND GRAVEL (BASE)	
DERBY ACRES PIT	ARCO OIL AND GAS COMPANY	SAND AND GRAVEL (BASE)	
DUTCH CLEANSER MINE (SESMOTITE MINE)	MATCON CORP., INC.	PUMICE	CLAY (BENTONITE)
EDISON SAND PIT	EDISON SAND COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
FRAZIER MOUNTAIN PIT	WAINWRIGHT, JAMES	SAND AND GRAVEL (BASE)	
GARCES HIGHWAY OUARRY (SOUTHARD PIT)	SOUTHARD, LARRY	STONE (BASE)	STONE (S.B.)
GREENHORN CREEK PLACER	GREENHORN MOUNTAIN MINING ASSOCIATION	GOLD (PLACER)	
HANSEN DG PIT	HANSEN, HOMER J.	STONE (S.B.)	
HOBO MINE (HOB0 MILL SITE)	FINDLY, LAWRENCE I.	GOLD (LODE)	
HUNSAKER OUARRY	HUNSAKER, WILLIAM	STONE (BASE)	STONE (S.B.)
JAMES ROAD PIT	KERN ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
JAMES ROAD PIT	GRANITE CONSTRUCTION COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
KERN RIVER PIT	ANDERSON, WILLIAM A.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
KERN RIVER PIT	WEBSTER SAND, INC.	SPECIALTY SAND (OTHER USES)	
KRAMER PIT (BORON PIT)	U.S. BORAX AND CHEMICAL CORP.	BORATES	
LOST HILLS MINE	HOLLOWAY, H.M., INC.	GYPSUM	
LOWES SOUTHERN CLAY PIT	LOWES SOUTHERN CLAY OF CALIFORNIA, INC.	SHALE (SPECIALTY USES)	SHALE (FOR CEMENT)
MCKITTRICK QUARRY	EXCEL-MINERAL COMPANY, INC.	SHALE (SPECIALTY USES)	DIATOMITE

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec. 1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
AGGREGATE PRODUCTS PIT	SW4,SEC21,S2,SW4,SEC21,T9S,R9E,SBB	IMPERIAL	OPEN PIT	PRODUCING
ANDRE ROAD PIT	SEC28,T13S,R12E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
EAST HIGHLINE PIT #1	NE4,SEC16,T13S,R16E,SBB	IMPERIAL	OPEN PIT	PRODUCING
ELMS PIT	N2,SEC26,T13S,R18E,SBB (PROJ)	IMPERIAL	OPEN PIT	INTERMITTENT
FRINK PIT (NILAND ROCK PIT)	SEC27,T9S,R13E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
FRINK PIT	NE4,SW4,SEC20,T9S,R13E,SBB	IMPERIAL	OPEN PIT	PRODUCING
GLAMIS PIT	UNDETERMINED	IMPERIAL	OPEN PIT	INTERMITTENT
HOLTVILLE #1 PIT	E2,SEC13,T16S,R16E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
HOLTVILLE #2 PIT	NW4,SEC1,T16S,R16E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
MASTERS BORROW PIT	NW4,SEC7,T15S,R12E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
MESQUITE MINE	T13S,R19E,SBB	IMPERIAL	OPEN PIT	PRODUCING
OCOTILLO PIT	SEC15,T16S,R9E,SBB	IMPERIAL	OPEN PIT	PRODUCING
OCOTILLO PIT	SEC15,T16S,R9E,SBB	IMPERIAL	OPEN PIT	PRODUCING
PADRE-MADRE MINE	SEC19,T15S,R21E,SBB (PROJ)	IMPERIAL	OPEN PIT	PRODUCING
PICACHO MINE	SEC2,3,4,9,10,11,T14S,R22E,SBB	IMPERIAL	OPEN PIT	PRODUCING
PICACHO PEAK PROJECT (CHRISTIE GOLD MINE)	SEC3,T14S,R22E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
PLASTER CITY QUARRY	SEC19,20,28,29,32,33,T13S,R9E,SBB	IMPERIAL	OPEN PIT	PRODUCING
SHELL CANYON PIT (FOSSIL CANYON PIT)	NW4,SEC14,T16S,R9E,SBB	IMPERIAL	OPEN PIT	PRODUCING
SHOVELER-ANNEX QUARRY	SEC19,30,T13S,R9E,SBB	IMPERIAL	QUARRY	PRODUCING
TIERRA PIT	NE4,SEC24,T16S,R16E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
WHEELER ROAD PIT	SEC10,T15S,R12E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
WONDERSTONE ROCK PIT	E2,NW4,SEC21,T9S,R9E,SBB	IMPERIAL	OPEN PIT	INTERMITTENT
ADAMS PIT	SEC32,33,T6S,R33E,MDB	INYO	OPEN PIT	PRODUCING
AMERICAN PERLITE PIT	SEC24,25,19,30,T10S,R33E,MDB	INYO	OPEN PIT	PRODUCING
ASH MEADOWS PIT	SEC9,10,15,T25N,R6E,SBB	INYO	OPEN PIT	INTERMITTENT
BRIGGS MINE	NW4,SEC13,T23S,R44E,MDB (PROJ)	INYO	OPEN PIT	INTERMITTENT
COSO PIT (BATTLE MOUNTAIN MINE)	NE4,SEC13,T21S,R37E,MDB	INYO	OPEN PIT	PRODUCING
CRYSTAL SPRINGS TALC MINE	SW4,SEC25,T20N,R9E,SBB	INYO	OPEN PIT	PRODUCING
FIVE BRIDGES PIT (NIKOLAUS PIT)	N2,N2,SEC19,T6S,R33E,MDB	INYO	OPEN PIT	INTERMITTENT
GERSTLEY MINE	SEC9,16,T22N,R7E,SBB	INYO	UNDERGROUND	INTERMITTENT
HAIWEE QUARRY (OCLITE QUARRY)	S2,NE4,SW4,SEC1,T20S,R37E,MDB	INYO	OPEN PIT	PRODUCING
J.O. CLAIMS	SE4,SEC20,NE4,SEC29,T15S,R41E,MDB	INYO	PROSPECT	INTERMITTENT
KEYSTONE MINE	SEC9,16,T24S,R45E,MDB	INYO	UNDERGROUND	PRODUCING
LONE PINE PIT	NE4,SW4,SEC25,T15S,R36E,MDB	INYO	OPEN PIT	INTERMITTENT
MARGIE #1 THRU #60	SE4,NE4&NW4,SE4,SEC13,T21S,R37E,MDB	INYO	OPEN PIT	PRODUCING
OWENS LAKE MINE	SEC9,10,15,16,T18S,R37E,MDB	INYO	OPEN PIT	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
ATKINSON PIT	ATKINSON BRICK COMPANY	CLAY (COMMON)	CLAY (FIRE)
AZUSA PIT	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
AZUSA PIT	TRANSIT MIXED CONCRETE COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BIG HORN MINE	SPEERSTRA, SAM	GEM MINERALS	
BIG ROCK CREEK PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BORGES ROCK	BORGES ROCK PRODUCTS, INC	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BOULEVARD PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CALMAT PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CASTAIC QUARRY	CASTAIC BRICK MANUFACTURING COMPANY	CLAY (COMMON)	
DEL SUR RIDGE QUARRY	BOUQUET CANYON STONE COMPANY	DIMENSION STONE (NON-SPECIFIED)	
DEVILS GATE RESERVIOR PIT	D & S EARTH MOVERS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
DURBIN PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
EMPIRE LANDING QUARRY	CONNOLLY-PACIFIC COMPANY	STONE (RIP RAP)	STONE (BASE)
FISH CANYON QUARRY	AZUSA ROCK, INC.	STONE (P.C.C.)	STONE (RIP RAP)
IRWINDALE PIT	LIVINGSTON-GRAHAM, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LANG STATION PIT	LANG STATION SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LANG STATION PIT (SANTA CLARA RIVER PIT)	CURTIS SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LITTLEROCK PIT	ANTELOPE VALLEY AGGREGATE, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LITTLEROCK WASH PIT	STATE SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
MALIBU LAKE	MALIBU LAKE MOUNTAIN CLUB, LTD.	SAND AND GRAVEL (FILL)	
PALMDALE PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (BASE)	SERICITE
PASADENA AGGREGATES PIT	R.T.D. ROCK AND SAND	SAND AND GRAVEL (BASE)	
PEBBLY BEACH QUARRY	CONNOLLY-PACIFIC COMPANY	STONE (RIP RAP)	STONE (S.B.)
RELIANCE PIT (AZUSA)	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
RELIANCE PIT (IRWINDALE)	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
RODEFFER PIT (RODEFFER SAND & GRAVEL QUARRY)	THREE D SERVICES	SAND AND GRAVEL (BASE)	
SHELDON PIT AT SUN VALLEY	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	
SOLEDAD CANYON PIT	CURTIS SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SOLEDAD PIT	P.W. GILLIBRAND COMPANY	SAND AND GRAVEL (P.C.C.)	STONE (RIP RAP)
SUNBURST PIT (SIERRA PIT)	SUNBURST DECORATIVE ROCK, INC.	DECORATIVE ROCK (NON-SPECIFIED)	
EL TORO PIT	EL TORO MATERIALS COMPANY	STONE (S.B.)	STONE (FILL)
GYPSUM CANYON PIT	PACIFIC CLAY BUILDING PRODUCTS	CLAY (COMMON)	
IRVINE LAKE PIT	BLUE DIAMOND MATERIALS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LUCAS CANYON QUARRY	ORTEGA ROCK QUARRY	STONE (FILL), DECOMPOSED GRANITE	
MISSION VIEJO SAND PLANT	CALIFORNIA SILICA PRODUCTS COMPANY	SPECIALTY SAND (OTHER USES)	CLAY (KAOLIN)
PLATZ QUARRY (MARION)	RIVERSIDE CEMENT COMPANY	CLAY (KAOLIN)	

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
PINE CREEK MINE	SEC5,T7S,R30E,MDB	INYO	UNDERGROUND	PRODUCING
RED HILL CINDER PIT	SEC31,T22S,R38E,MDB	INYO	OPEN PIT	PRODUCING
SIDEHILL MINE	SEC18,19,T26N,R5E,SBB	INYO	OPEN PIT	INTERMITTENT
SNOWCAPS MINE	SEC7,T13S,R36E,MDB	INYO	OPEN PIT	PRODUCING
WHITE EAGLE MINE	SE4,SEC3,T13S,R37E,MDB (PROJ)	INYO	UNDERGROUND	PRODUCING
WHITE QUARRY (INYO MARBLE QUARRY)	SE4,SEC4,T16S,R37E,MDB	INYO	QUARRY	PRODUCING
107 LIMESTONE QUARRY	SEC22,26,27,T9N,R18W,SBB	KERN	OPEN PIT	PRODUCING
107 SHALE QUARRY	SEC22,26,27,T9N,R18W,SBB	KERN	OPEN PIT	PRODUCING
ARVIN PIT	SEC28,T31S,R30E,MDB	KERN	OPEN PIT	PRODUCING
BARRETT PIT	W2,SEC34,T32S,R33E,MDB	KERN	OPEN PIT	INTERMITTENT
BERTRAND SAND PIT	W2,NW4,SEC27,T26S,R39E,MDB	KERN	OPEN PIT	INTERMITTENT
BIG ROCK PIT	W2,NE4&E2,NW4,SEC18,SBB	KERN	OPEN PIT	PRODUCING
BOWMAN ROAD PIT	S2,SW4,SEC2,T27S,R39E,MDB	KERN	OPEN PIT	PRODUCING
CACTUS MINE (BLUE EAGLE MINE)	W2,SEC17,T10N,R13W,SBB	KERN	OPEN PIT	PRODUCING
CALCITE QUARRY	S2,SEC10,SEC14,T10N,R15W,SBB	KERN	QUARRY	PRODUCING
CAUENTE PIT	W2,SEC19,T30S,R30E,MDB	KERN	OPEN PIT	INTERMITTENT
CANEBAKE CREEK PIT (LADD PIT)	SW4,SE4,SEC16,T25S,R36E,MDB	KERN	OPEN PIT	INTERMITTENT
CHEVRON PIT	SEC36,T31S,R28E,MDB	KERN	OPEN PIT	INTERMITTENT
DERBY ACRES PIT	SEC11,T31S,R22E,MDB	KERN	OPEN PIT	INTERMITTENT
DUTCH CLEANSER MINE (SESMOTITE MINE)	SEC5,6,7,8,T29S,R38E,MDB	KERN	OPEN PIT	INTERMITTENT
EDISON SAND PIT	SW4,NW4,SEC17,T30S,R30E,MDB	KERN	OPEN PIT	PRODUCING
FRAZIER MOUNTAIN PIT	SW4,SW4,SEC33,T9N,R19W,SBB	KERN	OPEN PIT	INTERMITTENT
GARCES HIGHWAY QUARRY (SOUTHARD PIT)	NE4,SEC24,T25S,R29E,MDB	KERN	QUARRY	INTERMITTENT
GREENHORN CREEK PLACER	SEC1,11,12,13,T27S,R31E,MDB	KERN	DREDGE	INTERMITTENT
HANSEN DG PIT	S2,SEC21,T32S,R35E,MDB	KERN	OPEN PIT	INTERMITTENT
HOBO MINE (HOB0 MILL SITE)	SEC15,16,21,22,T27S,R32E,MDB	KERN	OPEN PIT	INTERMITTENT
HUNSAKER QUARRY	SE4,NE4,SEC24,T25S,R28E,MDB	KERN	OPEN PIT	INTERMITTENT
JAMES ROAD PIT	NE4,SEC28,T28S,R27E,MDB	KERN	OPEN PIT	PRODUCING
JAMES ROAD PIT	NE4,SEC28,T28S,R27E,MDB	KERN	OPEN PIT	INTERMITTENT
KERN RIVER PIT	SEC32,T29S,R27E,MDB	KERN	IN-STREAM	INTERMITTENT
KERN RIVER PIT	SW4,SEC3,T29S,R28E,MDB	KERN	OPEN PIT	INTERMITTENT
KRAMER PIT (BORON PIT)	SEC13-15,22-14,T11N,R8W,SBB	KERN	OPEN PIT	PRODUCING
LOST HILLS MINE	SEC11,14,23-25,T26S,R20E,MDB	KERN	OPEN PIT	PRODUCING
LOWES SOUTHERN CLAY PIT	SEC9,T11N,R24W,SBB	KERN	OPEN PIT	PRODUCING
MCKITTRICK QUARRY	SEC5,T30S,R21E,MDB	KERN	QUARRY	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
MCKITTRICK QUARRY (SIMRIC QUARRY)	COOPER, STANLEY E.	SHALE (AGGREGATE)	
MICROWAVE QUARRY	NATIONAL CEMENT CO. OF CALIFORNIA, INC.	LIMESTONE (FOR CEMENT)	
MILLER PIT (MOJAVE PIT)	RANDTRAK COMPANY	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
MOJAVE PIT	ASPHALT CONSTRUCTION COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
MONARCH QUARRIES	MONARCH QUARRIES	DECORATIVE ROCK (NON-SPECIFIED)	
MONOLITH LIMESTONE QUARRY (JAMESON QUARRY)	CALAVERAS CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
MORTON PIT	BOB MORTON CONSTRUCTION, INC.	SAND AND GRAVEL (BASE)	
PLACER CLAIM OPEN PIT	BLAKE CONSTRUCTION COMPANY	DECORATIVE ROCK (NON-SPECIFIED)	
PV CLAY MINE (WHITE ROCK QUARRY)	CONSERVATION FUND	CLAY (FIRE)	CLAY (KAOLIN)
RANDBURG FLAGSTONE QUARRY	PRUETT, ANN	DIMENSION STONE (SCHIST)	
REWARD ROAD QUARRY (COOPER QUARRY)	COOPER, STANLEY E.	SHALE (AGGREGATE)	
ROBBERS ROOST MINE	ORO, LIMITED	GOLD (PLACER)	
SAN EMIGDIO PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SAND CANYON PIT	CAL-CI-CO ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SAND RIDGE PRESERVE	NATURE CONSERVENCY	SPECIALTY SAND (OTHER USES)	
SANTA FE PIT	SANTA FE ENERGY CORP.	SAND AND GRAVEL (FILL)	
SECTION 13-24 QUARRY	CALMAT COMPANY (CEMENT DIVISION)	LIMESTONE (FOR CEMENT)	SHALE (FOR CEMENT)
SHELL SHALE QUARRY	SHELL WESTERN E&P, INC.	STONE (BASE)	SHALE (LIGHT AGGREGATE)
SHUMAKER DG PIT (BUESEE HILLS PIT)	SHUMAKER, JAMES H.	STONE (S.B.)	
SILVER QUEEN MINE (MCBRAYER MINE)	NATIONAL CEMENT CO. OF CALIFORNIA, INC.	SILICA	SILVER (LODE)
STANDARD HILL MINE (BROWERS HILL MINE)	BILLITON MINERALS U.S.A., INC.	GOLD (LODE)	SILVER (LODE)
TAFT PIT	TAFT READY MIX	SAND AND GRAVEL (P.C.C.)	
TAFT QUARRY	EXCEL-MINERAL COMPANY, INC.	SHALE (SPECIALTY USES)	DIATOMITE
TEHACHAPI PIT	CLODFELTER CONSTRUCTION, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
TEHACHAPI PIT	SIERRA PIEDRA COMPANY	SAND AND GRAVEL (P.C.C.)	
TEHACHAPI PIT	BARCOTT, P.G.	STONE (S.B.)	
TEJON RANCH PIT	TEJON RANCH COMPANY	SAND AND GRAVEL (BASE)	
TWISSELMAN SHALE PIT	TWISSELMAN, CARL F., II	SHALE (LIGHT AGGREGATE)	
WHEELER RIDGE PIT	KERN ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
YELLOW ASTER MINE	RAND MINING COMPANY	GOLD (LODE)	SILVER (LODE)
ANDREW MINE	CURTIS TUNGSTEN	TUNGSTEN	
ANTELOPE VALLEY PIT	HI-GRADE MATERIALS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
ARROW ROCK PIT	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
ATKINSON PIT	NW4,SEC16,T3S,R13W,SBB	LOS ANGELES	OPEN PIT	INTERMITTENT
AZUSA PIT	S2,SEC22,T1N,R10W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
AZUSA PIT	N2,SEC3,T1N,R10W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
BIG HORN MINE	SE4,SE4,31,T2N,R7W,SBB	LOS ANGELES	UNDERGROUND	INTERMITTENT
BIG ROCK CREEK PIT	SEC7,8,17,18,19,R9W,T5N,SBB	LOS ANGELES	IN-STREAM	PRODUCING
BORGES ROCK	SEC7,T2N,R15W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
BOULEVARD PIT	SEC24,T2N,R15W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
CALMAT PIT	W2,SEC20,T2N,R14W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
CASTAIC QUARRY	N2,NW4,SEC24,T5N,R17W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
DEL SUR RIDGE QUARRY	E2,SEC9,T5N,R15W,SBB	LOS ANGELES	QUARRY	INTERMITTENT
DEVILS GATE RESERVIOR PIT	SEC7,T1N,R12W,SBBM	LOS ANGELES	OPEN PIT	PRODUCING
DURBIN PIT	N2,SEC13,T1S,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
EMPIRE LANDING QUARRY	UNDETERMINED	LOS ANGELES	QUARRY	PRODUCING
FISH CANYON QUARRY	NE4,SEC21,NW4,SEC22,T1N,R10W,SBB	LOS ANGELES	QUARRY	PRODUCING
IRWINDALE PIT	SE4,SEC1,T1S,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
LANG STATION PIT	E2,SEC18,T4N,R14W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
LANG STATION PIT (SANTA CLARA RIVER PIT)	SEC18,T4N,R14W,SBB	LOS ANGELES	GRAVEL BAR SKIMMING	PRODUCING
LITTLE ROCK PIT	SEC2,T5N,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
LITTLE ROCK WASH PIT	SEC1,T5N,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
MAJUBA LAKE	SEC3,R18W,T1S,SBB	LOS ANGELES	DREDGE	INTERMITTENT
PALMDALE PIT	S2,SEC3,T5N,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
PASADENA AGGREGATES PIT	SE4,SE4,SEC6,T1N,R12W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
PEBBLY BEACH QUARRY	UNDETERMINED	LOS ANGELES	QUARRY	PRODUCING
RELIANCE PIT (AZUSA)	S2,SEC28,SEC34,T1N,R10W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
RELIANCE PIT (IRWINDALE)	S2,SEC28,T1N,R10W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
RODEFFER PIT (RODEFFER SAND & GRAVEL QUARRY)	SE4,SE4,SEC11,T1S,R11W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
SHELDON PIT AT SUN VALLEY	N2,SEC19,SW4,SEC18,T2N,R14W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
SOLEDAD CANYON PIT	SE4,NE4,SEC9,T4N,R14W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
SOLEDAD PIT	NE4,SEC17,T4N,R14W,SBB	LOS ANGELES	OPEN PIT	PRODUCING
SUNBURST PIT (SIERRA PIT)	SE4,SEC2,T1S,R11W,SBB	LOS ANGELES	QUARRY/LANDFILL	PRODUCING
EL TORO PIT	SEC7,T6S,R7W,SBB	ORANGE	QUARRY	PRODUCING
GYPSUM CANYON PIT	E2,SW4,SE4,SEC10,T4S,R8W,SBB	ORANGE	OPEN PIT	PRODUCING
IRVINE LAKE PIT	SEC32,T4S,R7W,SBB	ORANGE	IN-STREAM	PRODUCING
LUCAS CANYON QUARRY	SEC9,T7S,R6W,SBB	ORANGE	QUARRY	PRODUCING
MISSION VIEJO SAND PLANT	S34,35,T7S,R7W,SBB	ORANGE	QUARRY	PRODUCING
PLATZ QUARRY (MARION)	NW4,SEC12,R7W,T6S,SBB	ORANGE	QUARRY	PRODUCING

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
RANCHO MISSION VIEJO QUARRY	RIVERSIDE CEMENT COMPANY	CLAY (OTHER USES)	
SAN JUAN CREEK PIT	CALMAT COMPANY (AGGREGATE DIVISION)	STONE (P.C.C.)	STONE (BASE)
STAR PIT (GYPSUM CANYON PIT)	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
TRABUCO CREEK PIT	MISSION VIEJO MATERIALS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
3M CORONA QUARRY	MINNESOTA MINING & MANUFACTURING CO.	DECORATIVE ROCK (ROOFING GRANULES)	
6 MINE (HERRINGTON MINE)	UNITED STATES TILE COMPANY	CLAY (KAOLIN)	CLAY (OTHER USES)
A-1 THOUSAND PALMS PIT	A-1 AGGREGATES, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (FILL)
AGUANGA PIT (SHAMFLOCK PIT, TEMECULA PIT)	C.L. PHARRIS SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
AIRPORT BLVD. PIT	VALLEY GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
ALBERHILL CLAY MINE	PACIFIC CLAY PRODUCTS, INC.	CLAY (FIRE)	CLAY (KAOLIN)
ALBERHILL DEE GEE PIT	ALBERHILL DEE GEE COMPANY	DECOMPOSED GRANITE	
AVALON STREET PIT	E.L. YEAGER CONSTRUCTION COMPANY, INC.	STONE (S.B.)	
BIDDLE PITS	PACIFIC CLAY PRODUCTS, INC.	CLAY (KAOLIN)	
CABAZON PIT	BEAUMONT CONCRETE COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CAJALICO QUARRY	FONTANA PAVING, INC.	STONE (BASE)	
CHUCKAWALLA MINE	SOUTHERN DESERT GOLD CORP.	GOLD (LODE)	SILVER (LODE)
CORONA CLAY PIT	RIVERSIDE CEMENT COMPANY	CLAY (COMMON)	
CORONA MINE	CORONA INDUSTRIAL SAND CO.	SPECIALTY SAND (OTHER USES)	
CORONA PACIFIC QUARRY (CORONA QUARRY)	PACIFIC ROCK AND GRAVEL CO.	STONE (RIP RAP)	STONE (BASE)
CORONA PIT (GLEN IVY-TEMESCAL OPERATION)	CHANDLER'S SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CORONA QUARRY	ALL AMERICAN ASPHALT COMPANY	STONE (P.C.C.)	STONE (BASE)
CRESTMORE QUARRY	RIVERSIDE CEMENT COMPANY	STONE (BASE)	STONE (RIP RAP)
DAWSON CANYON PIT	C.L. PHARRIS SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	
DILLON ROAD PIT (R BAR C SAND AND GRAVEL PIT)	R BAR C SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
DILLON ROAD PIT	DIERKING, DON	STONE (P.C.C.)	STONE (BASE)
DILLON ROAD PIT	JAMES E. SIMON COMPANY	SAND AND GRAVEL (BASE)	
DOMINGUEZ LEASE PIT (DOMINGUEZ MINE)	UNITED STATES TILE COMPANY	CLAY (COMMON)	SHALE (SPECIALTY USES)
EAGLE CANYON QUARRY (RANCHO EL SOBRANTE QUARRY)	SANTA ANA RIVER ROCK COMPANY	STONE (RIP RAP)	
EL CERRITO-GLEN IVY PIT	MOBILE SAND COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
FIGUEROA QUARRY	FIGUEROA BROTHERS MINING & DECOR. STONE	DECORATIVE ROCK (NON-SPECIFIED)	
GARNET ROCK PIT (PALM SPRINGS PIT)	MASSEY SAND AND ROCK COMPANY	STONE (P.C.C.)	STONE (BASE)
GLEN IVY PIT (MAITRI ROAD PIT)	FOSTER SAND AND GRAVEL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
RANCHO MISSION VIEJO QUARRY	SEC6,7,18,R6W,T8S,SBB	ORANGE	QUARRY	PRODUCING
SAN JUAN CREEK PIT	SEC25,35,T7S,R7W,SBB	ORANGE	IN-STREAM	PRODUCING
STAR PIT (GYPSUM CANYON PIT)	SEC28,30,T3S,R8W,SBB	ORANGE	OPEN PIT	PRODUCING
TRABUCO CREEK PIT	S2,SEC24,N2,SEC25,T7S,R8W,SBB	ORANGE	OPEN PIT	PRODUCING
3M CORONA QUARRY	UNDETERMINED	RIVERSIDE	QUARRY	PRODUCING
6 MINE (HERRINGTON MINE)	E2,SE4,SEC26,T4S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
A-1 THOUSAND PALMS PIT	E2,SEC31,T3S,R6E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
AGUANGA PIT (SHAMROCK PIT, TEMECULA PIT)	SEC13,SEC24,T8S,R1W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
AIRPORT BLVD. PIT	S2,SEC18,N2,SEC19,T6S,R9E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
ALBERHILL CLAY MINE	SEC21,22,23,T5S,R5W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
ALBERHILL DEE GEE PIT	UNDETERMINED	RIVERSIDE	QUARRY	PRODUCING
AVALON STREET PIT	NW4,SEC10,T2S,R5W,SBB (PROJ)	RIVERSIDE	OPEN PIT	INTERMITTENT
BIDDLE PITS	SEC22,23,T5S,R5W,SB	RIVERSIDE	OPEN PIT	PRODUCING
CABAZON PIT	SW2,SEC7,NE4,SEC18,T3S,R2E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
CAJALICO QUARRY	NE4,SEC5,T4S,R6W,SBB	RIVERSIDE	QUARRY	PRODUCING
CHUCKAWALLA MINE	SEC16,17,20,21,T8S,R17E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
CORONA CLAY PIT	N2,SW4,SEC26,T4S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
CORONA MINE	NW4,NW4,SEC16,T4S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
CORONA PACIFIC QUARRY (CORONA QUARRY)	NW4,NE4&NE4,NW4,SEC4,T4S,R6W,SBB	RIVERSIDE	QUARRY	PRODUCING
CORONA PIT (GLEN IVY-TEMESCAL OPERATION)	SW4,SEC2,SE4,SEC3,T5S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
CORONA QUARRY	S2,NW4,SEC33,T3S,R6W,SBB (PROJ)	RIVERSIDE	QUARRY	PRODUCING
CRESTMORE QUARRY	SEC2,3,T2S,R5W,SBB	RIVERSIDE	QUARRY	PRODUCING
DAWSON CANYON PIT	SEC27,34,35,T4S,R6W,SEC1,T5S,R6W,SB	RIVERSIDE	OPEN PIT	PRODUCING
DILLON ROAD PIT (R BAR C SAND AND GRAVEL PIT)	N2,SW4,SW4,SEC29,T4S,R8E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
DILLON ROAD PIT	W2,SEC19,T4S,R8E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
DILLON ROAD PIT	SE4,SEC30,T4S,R8E,SBB	RIVERSIDE	OPEN PIT	INTERMITTENT
DOMINGUEZ LEASE PIT (DOMINGUEZ MINE)	SEC31,T3S,R7W,SBB (PROJ)	RIVERSIDE	OPEN PIT	PRODUCING
EAGLE CANYON QUARRY (RANCHO EL SOBRANTE QUARRY)	SEC3,10,T4S,R6W,SBB (PROJ)	RIVERSIDE	QUARRY	PRODUCING
EL CERRITO-GLEN IVY PIT	SW4,SEC22,NW4,SEC27,T4S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING
FIGUEROA QUARRY	NW2,SEC36,T3S,R20E,SBB	RIVERSIDE	QUARRY	PRODUCING
GARNET ROCK PIT (PALM SPRINGS PIT)	SW4,SEC23,T3S,R4E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
GLEN IVY PIT (MAITRI ROAD PIT)	SE4,SEC11,T5S,R6W,SBB	RIVERSIDE	OPEN PIT	PRODUCING

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
HARLOW QUARRY	PAUL HUBBS CONSTRUCTION COMPANY	STONE (BASE)	CLAY
INDIO ROCK PIT	MASSEY SAND AND ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
INTERMAC PIT	FONTANA PAVING, INC.	SAND AND GRAVEL (BASE)	
JACK RABBIT CANYON QUARRY	MORENO VALLEY SAND AND GRAVEL COMPANY	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
JUARO CANYON QUARRY	D.J.B. PROPERTIES	STONE (RIP RAP)	
LEVY QUARRY	LEVY QUARRIES	STONE (BASE)	STONE (S.B.)
LUSTON CLAY PIT	CALMAT COMPANY (CEMENT DIVISION)	CLAY (OTHER USES)	
MAITRI ROAD PIT (COLD WATER CANYON PIT)	J.F. AND T. SAND COMPANY	SAND AND GRAVEL (P.C.C.)	
MAITRI ROAD PIT (COLD WATER AGGREGATES PIT)	R.J. NOBLE COMPANY	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (BASE)
MATCH PIT	MATCH CORP.	SAND AND GRAVEL (P.C.C.)	
MAYHEW CANYON PIT	C.L. PHARRIS SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	
MISSION CLAY PRODUCTS PIT	MISSION CLAY PRODUCTS CORP.	CLAY (COMMON)	
MOTTE PIT (OUAIL LAKE PROPERTIES PIT)	MOTTE, FRANKLIN	SAND AND GRAVEL (BASE)	
MOUNTAIN AVENUE PIT #1	ELSINORE READY MIX COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
MOUNTAIN AVENUE PIT #2	ELSINORE READY MIX COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
PACIFIC CLAY BORROW PIT	PACIFIC CLAY PRODUCTS, INC.	SAND AND GRAVEL (P.C.C.)	
PACIFIC CLAY PITS	PACIFIC CLAY PRODUCTS, INC.	CLAY (KAOLIN)	
PALM DESERT ROCK AND SAND PIT (FARGO CANYON PIT)	PALM DESERT ROCK AND SAND, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
PARKWEST INDUSTRIAL CENTER PIT	NORTH COUNTY SAND AND GRAVEL	DECOMPOSED GRANITE (FILL)	
PRADO PIT	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	
QUANDT BORROW PIT	QUANDT, CARL H.	SPECIALTY SAND (OTHER USES)	
RIO DEL SOL PIT (SING PIT)	AMRA, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
ROGERS PIT	MEANS CONSTRUCTION COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
RUBIDOUX QUARRY (ORMOND QUARRY)	PAUL HUBBS CONSTRUCTION COMPANY	STONE (BASE)	
SAN JACINTO PIT (SOBOBA PLANT)	CHURCH ENGINEERING, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SEDCO PIT	LAKE ELSINORE MATERIALS	STONE (S.B.)	
SHEPWELLS PIT #1	SHEPWELLS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SHEPWELLS PIT #2	SHEPWELLS, INC.	SAND AND GRAVEL (BASE)	
SLOAN PIT	PACIFIC CLAY PRODUCTS, INC.	CLAY (FIRE)	CLAY (FIRE)
SMITH SAND PIT	RIVERSIDE CEMENT COMPANY	SPECIALTY SAND (OTHER USES)	
STRINGFELLOW QUARRY	PAUL HUBBS CONSTRUCTION COMPANY	STONE (BASE)	
SUPER CREEK CLAIMS QUARRY (PAINTED HILL QUARRY)	WHITEWATER ROCK AND SUPPLY COMPANY	DECORATIVE ROCK (NON-SPECIFIED)	DIMENSION STONE (NON-SPECIFIED)
TEMECULA SAND COMPANY PIT (KACOR LEASE PIT)	TEMECULA SAND COMPANY	SAND AND GRAVEL (P.C.C.)	

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
HARLOW QUARRY	SW4,SEC15,T4S,R6W,S8B	RIVERSIDE	QUARRY/OPEN PIT	PRODUCING
INDIO ROCK PIT	NE4,SEC33,NW4,34,T4S,R7E,S8B	RIVERSIDE	OPEN PIT	PRODUCING
INTERMAC PIT	UNDETERMINED	RIVERSIDE	OPEN PIT	PRODUCING
JACK RABBIT CANYON QUARRY	SW4,SEC14,NW4,SEC23,T3S,R2W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
JUARO CANYON QUARRY	SW4,SW4,SEC20,T4S,R1E,S8B	RIVERSIDE	QUARRY	PRODUCING
LEVY QUARRY	SEC26,27,T4S,R22E,S8B	RIVERSIDE	QUARRY	INTERMITTENT
LUSTON CLAY PIT	E2,NW4,SEC26,T4S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MAITRI ROAD PIT (COLDWATER CANYON PIT)	NW4,SEC11,T5S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MAITRI ROAD PIT (COLDWATER AGGREGATES PIT)	NE4,SEC10,T5S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MATCH PIT	E2,SEC3,T3S,R1E,S8B	RIVERSIDE	IN-STREAM	PRODUCING
MAYHEW CANYON PIT	SEC2,11,T5S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MISSION CLAY PRODUCTS PIT	SEC35,T4S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MOTTE PIT (QUAIL LAKE PROPERTIES PIT)	SEC22,27,T3S,R2W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MOUNTAIN AVENUE PIT #1	SEC33,34,T5S,R5W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
MOUNTAIN AVENUE PIT #2	NW4,SEC27,NE4,SEC28,T5S,R5W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
PACIFIC CLAY BORROW PIT	W2,SEC21,T5S,R5W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
PACIFIC CLAY PITS	SEC21,T5S,R5W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
PALM DESERT ROCK AND SAND PIT (FARGO CANYON PIT)	NE4,SE4,SEC9,T5S,R8E,S8B	RIVERSIDE	OPEN PIT	INTERMITTENT
PARKWEST INDUSTRIAL CENTER PIT	SEC30,T8S,R2W,S8B	RIVERSIDE	OPEN PIT	INTERMITTENT
PRADO PIT	SE4,SEC19,T3S,R7W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
QUANDT BORROW PIT	SEC14,15,22,23,T4S,R1W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
RIO DEL SOL PIT (SING PIT)	E2,E2,SE4,SEC1,T4S,R5E,S8B	RIVERSIDE	OPEN PIT	PRODUCING
ROGERS PIT	SE4,SE4,SEC5,T5S,R2W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
RUBIDOUX QUARRY (ORMOND QUARRY)	SEC8,9,T2S,R5W,S8B (PROJ)	RIVERSIDE	QUARRY	PRODUCING
SAN JACINTO PIT (SOBOBA PLANT)	SEC14,15,22,23,T4S,R1W,S8B	RIVERSIDE	OPEN PIT	INTERMITTENT
SEDCO PIT	SE4,SEC15,T6S,R4W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
SHEPWELLS PIT #1	NW4,SE4,SEC25,T5S,R22E,S8B	RIVERSIDE	OPEN PIT	INTERMITTENT
SHEPWELLS PIT #2	NW4,SE4,SEC25,T5S,R22E,S8B	RIVERSIDE	OPEN PIT	INTERMITTENT
SLOAN PIT	NW4,SEC22,T5S,R5W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
SMITH SAND PIT	SW4,SW4,SEC17,T4S,R6W,S8B	RIVERSIDE	OPEN PIT	PRODUCING
STRINGFELLOW QUARRY	NW4,SE4,SEC1,T2S,R6W,S8B	RIVERSIDE	QUARRY	PRODUCING
SUPER CREEK CLAIMS QUARRY (PAINTED HILL QUARRY)	SEC36,T2S,R3E,S8B	RIVERSIDE	QUARRY	PRODUCING
TEMECULA SAND COMPANY PIT (KACOR LEASE PIT)	UNDETERMINED	RIVERSIDE	GRAVEL BAR SKIMMING	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)
from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
TEMESCAL CANYON PIT (CORONA INDUSTRIAL SAND PIT)	COROSIL CORP.	SPECIALTY SAND (OTHER USES)	CLAY (COMMON)
THOUSAND PALMS PIT	E.L. YEAGER CONSTRUCTION COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
WHITWATER ROCK PIT	MASSEY SAND AND ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	
WILLIAMS PIT	SHEPWELLS, INC.	SAND AND GRAVEL (P.C.C.)	
ALVIC QUARRY (ALUMIC QUARRY)	SOUTHWESTERN PORTLAND CEMENT COMPANY	SHALE (FOR CEMENT)	
ARGUS PIT (TREP BORROW PIT)	KERR-MCGEE CHEMICAL CORP.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
BARSTOW PIT	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BAXTER MINE (CAVE CANYON MINE)	DESHER MINING COMPANY	IRON ORE (FOR CEMENT)	
BECK MINE	STANDARD SLAG COMPANY	IRON ORE	
BEIGE ROCK QUARRY	BRUBAKER-MANN, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
BEIGE ROCK QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
BENTONITE PIT	BRUBAKER-MANN, INC.	CLAY (BENTONITE)	
BIRDSEYE GRANITE QUARRY (CHALCOAL BLACK QUARRY)	BRUBAKER-MANN, INC.	DECORATIVE ROCK (GRANITE)	STONE (BASE)
BLACK GRANITE QUARRY (TETONITA QUARRY)	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (GRANITE)	STONE (BASE)
BLACK MOUNTAIN QUARRY	SOUTHWESTERN PORTLAND CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
BLUE BOY QUARRY (BLUE BOY NO.1 AND NO.5)	PARTIN LIMESTONE PRODUCTS, INC.	LIMESTONE (FOR CEMENT)	LIMESTONE (FOR LIME)
BOROSOLVAY PIT	KERR-MCGEE CHEMICAL CORP.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
BRISTOL DRY LAKE PIT	LESLIE SALT COMPANY	CALCIUM COMPOUNDS	SODIUM COMPOUNDS
BRISTOL DRY LAKE PIT	NATIONAL CHLORIDE COMPANY OF AMERICA	CALCIUM COMPOUNDS	SALT
BRISTOL DRY LAKE PIT	C.V. ORGANIC FERTILIZER	GYPSUM	
BROWN-GOLD-LILAC QUARRY GROUP	BRUBAKER-MANN, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
BRUNER PACIFIC QUARRY (TURTLEBACK CLAIMS)	BRUNER PACIFIC MARBLE AND GRANITE, INC.	DIMENSION STONE (GRANITE)	DECORATIVE ROCK (NON SPECIFIED)
BRYMAN ROAD PIT	DAILY TRANSIT MIX CORP.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CADIZ DRY LAKE PIT	LEE CHEMICAL COMPANY	CALCIUM COMPOUNDS	
CALICHE QUARRY	SOUTHWESTERN PORTLAND CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
CALSPAR BICENTENNIAL GROUP	ELLERMAN, OTTO	FELDSPAR	

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
TEMESCAL CANYON PIT (CORONA INDUSTRIAL SAND PIT)	UNDETERMINED	RIVERSIDE	OPEN PIT	PRODUCING
THOUSAND PALMS PIT	NW4,SEC5,T4S,R6E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
WHITEWATER ROCK PIT	NE4,SEC11,T3S,R3E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
WILLIAMS PIT	N2,SE4,SEC32,T5S,R23E,SBB	RIVERSIDE	OPEN PIT	PRODUCING
ALVIC QUARRY (ALUMIC QUARRY)	SEC4,T6N,R2W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
ARGUS PIT (TREP BORROW PIT)	SEC18,T25S,R43E, MDB	SAN BERNARDINO	OPEN PIT	PRODUCING
BARSTOW PIT	SEC10,T9N,R1W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
BAXTER MINE (CAVE CANYON MINE)	SEC12,T11N,R6E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
BECK MINE	SEC31,T20N,R10E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
BEIGE ROCK QUARRY	S2,SE4,NW4,SEC30,T10N,R1E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BEIGE ROCK QUARRY	N2,SW4,SEC30,T10N,R1E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BENTONITE PIT	NE4,SEC1,T9N,R1W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
BIRDSEYE GRANITE QUARRY (CHALCOAL BLACK QUARRY)	NE4,SEC4,T9N,R1W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BLACK GRANITE QUARRY (TETONITA QUARRY)	SE4,SE4,SEC28,T12N,R1E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BLACK MOUNTAIN QUARRY	SEC5,T6N,R2W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
BLUE BOY QUARRY (BLUE BOY NO.1 AND NO.5)	SEC21,T3N,R2E,SBB	SAN BERNARDINO	QUARRY	PRODUCING
BOROSOLVAY PIT	W2,NW4,SEC30,T25S,R43E, MDB	SAN BERNARDINO	OPEN PIT	PRODUCING
BRISTOL DRY LAKE PIT	SEC22,27,28,T5N,R12E,SBB	SAN BERNARDINO	EVAPORATOR	PRODUCING
BRISTOL DRY LAKE PIT	SEC12,T4N,R12E,SBB	SAN BERNARDINO	EVAPORATOR	PRODUCING
BRISTOL DRY LAKE PIT	N2,SEC8,T4N,R12E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
BROWN-GOLD-LILAC QUARRY GROUP	NW4,SW4,SEC1,T9N,R1W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BRUNER PACIFIC QUARRY (TURTLEBACK CLAIMS)	SEC29,30,31,25,T5N,R2E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
BRYMAN ROAD PIT	SW4,SE4,SEC19,T7N,R4W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
CADIZ DRY LAKE PIT	UNDETERMINED	SAN BERNARDINO	OPEN PIT	PRODUCING
CALICHE QUARRY	SEC18,T6N,R2W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
CALSPAR BICENTENNIAL GROUP	NE4,SEC14,T7N,R2E,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
CALSPAR MINE	STEELHEAD RESOURCES, INC.	FELDSPAR	SILICA
CAMPUS PIT (TRI-CITY/LIVINGSTON- GRAHAM PIT)	HOLLIDAY ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
COLOSSEUM MINE	BOND GOLD CORP.	GOLD (LODE)	SILVER (LODE)
COLTON DEPOSIT (SLOVER MOUNTAIN Limestone)	CALMAT COMPANY (CEMENT DIVISION)	LIMESTONE (FOR CEMENT)	
CORONA PIT (CORONA ROCK PIT)	FONTANA PAVING, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
CRYSTAL HILLS PIT	CRYSTAL HILLS SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CUSHENBURY QUARRY (KAISER CEMENT QUARRY)	MITSUBISHI CEMENT CORP.	LIMESTONE (FOR CEMENT)	
DANBY DRY LAKE PIT (MILLIGAN MINE)	SALT PRODUCTS, INC.	SALT	SODIUM COMPOUNDS
DANBY DRY LAKE PIT (SALT PRODUCTS PIT)	NATIONAL CHLORIDE COMPANY OF AMERICA	SALT	
DUSTY ROSE QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
EAST GRAVEL PIT NO.2 (EAST GRAVE; PIT NO.1)	KERR-MCGEE CHEMICAL CORP.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
EW4 BRINE WELLS, AMBOY	LESLIE SALT COMPANY	CALCIUM COMPOUNDS	SODIUM COMPOUNDS
FONTANA PIT	FONTANA PAVING, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
FOURTH STREET PIT (LYTLE CREEK PIT)	FOURTH STREET ROCK CRUSHER COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GOLD-LILAC-BARK QUARRY GROUP	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
GRAVEL GIRTY PIT (HAMMER PIT)	HAMMER EQUIPMENT	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GREEN LEAD MINE	CHILNER, WILLIAM H., III	GOLD (LODE)	SILVER
GREEN MOUNTAIN QUARRY (DUNN QUARRY)	BRUBAKER-MANN, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
HAMMER PIT	HAMMER EQUIPMENT	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
HEAPS PEAK QUARRY (HEAPS PEAK BORROW PIT)	HARICH CONSTRUCTION COMPANY	STONE (S.B.)	STONE (FILL)
HENASON PIT	HENASON LIMITED	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
HILLTOP MINE	LATKER, MARK	GOLD (LODE)	SILVER (LODE)
KINGSTON MINE	AMERICAN COLLOID COMPANY	CLAY (BENTONITE)	
KRAMER HILLS MINE (SHAHAROLD MINE)	BEAVER RESOURCES C/O MOJAVE DESERT INN	GOLD (LODE)	SILVER (LODE)
LIF PIT	CAJON MATERIALS AND SERVICES	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
CALSPAR MINE	E2,SEC16,T7N,R2E,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
CAMPUS PIT (TRI-CITY/LIVINGSTON-GRAHAM PIT)	SEC2,T1S,R8W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
COLOSSEUM MINE	SEC10,T17N,R13E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
COLTON DEPOSIT (SLOVER MOUNTAIN LIMESTONE)	SEC19,T15N,R4W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
CORONA PIT (CORONA ROCK PIT)	SEC32,T3S,R6W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
CRYSTAL HILLS PIT	E2,SEC1,T3N,R1W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
CUSHENBURY QUARRY (KAISER CEMENT QUARRY)	NW4,SEC14,T3N,R1E,SBB	SAN BERNARDINO	QUARRY	PRODUCING
DANBY DRY LAKE PIT (MILLIGAN MINE)	S2,SEC13,T2N,R17E,SBB	SAN BERNARDINO	EVAPORATION SYSTEM	PRODUCING
DANBY DRY LAKE PIT (SALT PRODUCTS PIT)	SEC12,T2N,R18E,SBB	SAN BERNARDINO	EVAPORATOR	PRODUCING
DUSTY ROSE QUARRY	NE4,NW4,NW4,SEC33,T10N,R1W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
EAST GRAVEL PIT NO.2 (EAST GRAVE; PIT NO.1)	SW4,SEC20,T25S,R44E,MDB	SAN BERNARDINO	OPEN PIT	PRODUCING
EW4 BRINE WELLS, AMBOY	SEC19,T5N,R12E,SBB	SAN BERNARDINO	EVAPORATOR	PRODUCING
FONTANA PIT	UNDETERMINED	SAN BERNARDINO	OPEN PIT	PRODUCING
FOURTH STREET PIT (LYTLE CREEK PIT)	SEC6,T1S,R4W,SEC31,T1N,R4W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
GOLD-LILAC-BARK QUARRY GROUP	W2,SW4,NE4,SEC2,T9N,R1W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
GRAVEL GIRTY PIT (HAMMER PIT)	S2,SEC5,T8N,R23E,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
GREEN LEAD MINE	SW4,SEC27,T2N,R1W,SBB	SAN BERNARDINO	UNDERGROUND	PRODUCING
GREEN MOUNTAIN QUARRY (DUNN QUARRY)	NE4,NW4,SEC34,T12N,R5E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
HAMMER PIT	S2,SEC5,T8N,R22W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
HEAPS PEAK QUARRY (HEAPS PEAK BORROW PIT)	SW4,SW4,SEC24,T2N,R3W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
HENASON PIT	NE4,NE4,SEC31,T1S,R4W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
HILLTOP MINE	NW4,SEC21,T2N,R2E,SBB	SAN BERNARDINO	UNDERGROUND	PRODUCING
KINGSTON MINE	S2,SW4,SEC26,T18N,R9E,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
KRAMER HILLS MINE (SHAHAROLD MINE)	N2,SEC36,T10N,R6W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
LIF PIT	SEC1,T4N,R4W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
LUCERNE QUARRY(LA HABRA PRODUCTS KING 1-6)	PLEUSS-STAUFFER, INC.	LIMESTONE (OTHER USES)	
LUCERNE VALLEY PIT	HI-GRADE MATERIALS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LYNX CAT MOUNTAIN QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (GRANITE)	STONE (BASE)
LYTLE CREEK PIT A (SAN BERNARDINO PIT)	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LYTLE CREEK PIT B	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
MACKS PEAK QUARRY (ORO GRANDE QUARRY)	RIVERSIDE CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
MARBLE CANYON QUARRY	PFIZER, INC.	LIMESTONE (FOR CEMENT)	
MIDWAY GREEN QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
MINT GREEN QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
MORNING STAR MINE (NIPTON)	VANDERBILT GOLD CORP.	GOLD (LODE)	SILVER
MOUNTAIN PASS MINE	MOLYCORP, INC.	RARE EARTH ELEMENTS	BARITE
NEWBERRY HECTORITE MINE	N.L. CHEMICALS	CLAY (HECTORITE)	CLAY (BENTONITE)
NEWBERRY QUARRY (MPI-1 QUARRY)	CAL WEST ROCK PRODUCTS, INC.	STONE (BALLAST)	STONE (BASE)
OLD WEBSTER PIT (TRI-CITY REDLANDS PIT)	ROBERTSON READY MIX, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
ORIGINAL CANYON QUARRY (ORO GRANDE QUARRY)	RIVERSIDE CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
ORO GRANDE SILICA QUARRY	VINNELL MINING AND MINERALS CORP.	SILICA (QUARTZITE)	
P-1 PIT	HUNTINGTON TILE COMPANY	CLAY (KAOLIN)	CLAY (BALL)
PINK GRANITE QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (GRANITE)	STONE (BASE)
PINK ROCK QUARRY	BRUBAKER-MANN, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
PISGAH CRATER PIT	SANTA FE RAILROAD	STONE (BALLAST)	
PLUNGE CREEK PIT	ROBERTSON READY MIX, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
RANEY BORROW PIT	RANEY, ROBERT D.	DECOMPOSED GRANITE	STONE (BASE)
RED TOP MINE	SIERRA AGGREGATE COMPANY	STONE (BASE)	STONE (S.B.)
REDLANDS PIT NO.1 (REDLANDS AGGREGATE PIT)	C.L. PHARRIS SAND AND GRAVEL, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
REDLANDS PIT NO.2 (REDLANDS AGGREGATE PIT)	PHARRIS SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
LUCERNE QUARRY(LA HABRA PRODUCTS KING 1-6)	SEC22,T3N,R1W,S8B	SAN BERNARDINO	QUARRY	PRODUCING
LUCERNE VALLEY PIT	W2,NW4,SEC30,T4N,R1E,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
LYNX CAT MOUNTAIN QUARRY	SE4,SE4,SEC1,T10N,R4W,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
LYTLE CREEK PIT A (SAN BERNARDINO PIT)	SEC23,24,25,T1N,R5W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
LYTLE CREEK PIT B	SEC8,T1N,R5W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
MACKS PEAK QUARRY (ORO GRANDE QUARRY)	SEC9,T6N,R4W,S8B	SAN BERNARDINO	QUARRY	PRODUCING
MARBLE CANYON QUARRY	UNDETERMINED	SAN BERNARDINO	QUARRY	PRODUCING
MIDWAY GREEN QUARRY	SE4,SE4,SE4,SEC22,T12N,R5E,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
MINT GREEN QUARRY	NW4,NE4,SEC30,T11N,R1E,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
MORNING STAR MINE (NIPTON)	SEC28,T15N,R11E,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
MOUNTAIN PASS MINE	NE4,NW4,SEC13,T16N,R13E,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
NEWBERRY HECTORITE MINE	SEC35,T8N,R5E,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
NEWBERRY QUARRY (MPI-1 QUARRY)	S2,NW4,SEC5,T8N,R3E,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
OLD WEBSTER PIT (TRI-CITY REDLANDS PIT)	SEC11,T1S,R3W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
ORIGINAL CANYON QUARRY (ORO GRANDE QUARRY)	S2,SEC8,T6N,R4W,S8B	SAN BERNARDINO	QUARRY	PRODUCING
ORO GRANDE SILICA QUARRY	SEC17,T6N,R4W,S8B	SAN BERNARDINO	QUARRY	PRODUCING
P-1 PIT	NE4,SEC25,T14N,R17E,S8B	SAN BERNARDINO	OPEN PIT	INTERMITTENT
PINK GRANITE QUARRY	NE4,NE4,NW4,SEC14,T11N,R1W,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
PINK ROCK QUARRY	S2,SW4,SW4,SEC28,T10N,R1W,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
PISGAH CRATER PIT	SEC29,32,T8N,R6E,S8B	SAN BERNARDINO	OPEN PIT	INTERMITTENT
PLUNGE CREEK PIT	SEC9,10,T1S,R3W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
RANEY BORROW PIT	SE4,SEC33,T1S,R5W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
RED TOP MINE	SEC24,T7N,R3E,S8B	SAN BERNARDINO	QUARRY	INTERMITTENT
REDLANDS PIT NO.1 (REDLANDS AGGREGATE PIT)	SEC10,T1S,R3W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING
REDLANDS PIT NO.2 (REDLANDS AGGREGATE PIT)	SW4,SEC11,T1S,R3W,S8B	SAN BERNARDINO	OPEN PIT	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
SAN BERNARDINO PIT	HOLLIDAY ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SANTA ANA RIVER PIT	VERN ANTHONY GUNITE, INC.	SPECIALTY SAND (OTHER USES)	
SCHEERER QUARRY	RIVERSIDE CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
SEARLES LAKE PLANT	LESLIE SALT COMPANY	SALT	
SHAY-KLONDIKE QUARRY (ORO GRANDE QUARRY)	RIVERSIDE CEMENT COMPANY	SHALE (FOR CEMENT)	
SILVER PEAK QUARRY	BRUBAKER-MANN, INC.	DECORATIVE ROCK (CARBONATE)	STONE (BASE)
SPARKHULE QUARRY (ORO GRANDE QUARRY)	RIVERSIDE CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
SUPERIOR SILICA QUARRY	CALMAT COMPANY (CEMENT DIVISION)	SILICA	
TRONA PLANT	LESLIE SALT COMPANY	SALT	
UPLAND NORTH PIT	BLUE DIAMOND MATERIALS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
UPLAND PIT	HOLLIDAY ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
UPLAND PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
UPLAND SOUTH PIT (AIRPORT PIT)	BLUE DIAMOND MATERIALS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
VALENTINE PIT	OWL ROCK PRODUCTS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
VICTOR #1 PIT	HI-DESERT CONCRETE PRODUCTS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
VICTORITE CLAY MINE	UNITED STATES TILE COMPANY	CLAY (BENTONITE)	
VICTORVILLE PIT	GRAHAM ROCK AND SAND COMPANY	SAND AND GRAVEL (BASE)	
WESTEND PLANT (LAKE AND MINERAL RESOURCES)	KERR-MCGEE CHEMICAL CORP.	SODIUM COMPOUNDS	BORATES
WHEATON SPRINGS BORROW PIT	FREHNER CONSTRUCTION	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
WHITE KNOB QUARRY	PLEUSS-STAUFFER, INC.	LIMESTONE (OTHER USES)	
WHITE MOUNTAIN QUARRY	SOUTHWESTERN PORTLAND CEMENT COMPANY	LIMESTONE (FOR CEMENT)	
WHITE QUARRY	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (CARBONATE)	STONE (BASE)
WINE QUARRY (NEWBERRY RED QUARRY)	CALICO ROCK MILLING, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
WINE RED QUARRY (NEWBERRY RED QUARRY)	BRUBAKER-MANN, INC.	DECORATIVE ROCK (VOLCANIC ROCK)	STONE (BASE)
ATCKISON PIT (ASHLAND GRANITE QUARRY)	ASHLAND GRANITE CORP.	DECOMPOSED GRANITE	

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec. 1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
SAN BERNARDINO PIT	UNDETERMINED	SAN BERNARDINO	OPEN PIT	INTERMITTENT
SANTA ANA RIVER PIT	SEC22,T1S,R4W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
SCHEERER QUARRY	NE4,SEC35,T6N,R4W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
SEARLES LAKE PLANT	SEC13-17,20,21,23,24,T26S,R43E,MDB	SAN BERNARDINO	EVAPORATION SYSTEM	PRODUCING
SHAY-KLONDIKE QUARRY (ORO GRANDE QUARRY)	SEC17,T6N,R4W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
SILVER PEAK QUARRY	SEC32,T8N,R6W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
SPARKHULE QUARRY (ORO GRANDE QUARRY)	S2,SEC4,T6N,R4W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
SUPERIOR SILICA QUARRY	NE4,SEC16,T6N,R4W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
TRONA PLANT	SEC31,T25S,R43E,MDB	SAN BERNARDINO	EVAPORATOR	PRODUCING
UPLAND NORTH PIT	SEC26,35,T1N,R8W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
UPLAND PIT	SEC2,T1S,R8W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
UPLAND PIT	SEC25,26,T1N,R8W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
UPLAND SOUTH PIT (AIRPORT PIT)	SEC2,T1S,R8W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
VALENTINE PIT	W2,SEC19,T3S,R7W,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
VICTOR #1 PIT	NW4,SEC6,T1N,R9E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
VICTORITE CLAY MINE	SEC26,35,T7N,R3W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
VICTORVILLE PIT	SEC27,T5N,R4W,SBB	SAN BERNARDINO	OPEN PIT	INTERMITTENT
WESTEND PLANT (LAKE AND MINERAL RESOURCES)	SEC36,T25S,R43E,MDB	SAN BERNARDINO	EVAPORATION SYSTEM	PRODUCING
WHEATON SPRINGS BORROW PIT	E2,SEC34,W2,SEC35,T16N,R14E,SBB	SAN BERNARDINO	OPEN PIT	PRODUCING
WHITE KNOB QUARRY	SEC6,T3N,R1W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
WHITE MOUNTAIN QUARRY	SEC7,T6N,R2W,SBB	SAN BERNARDINO	QUARRY	PRODUCING
WHITE QUARRY	SE4,NE4,SEC35,T6N,R4W,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
WINE QUARRY (NEWBERRY RED QUARRY)	SEC9,T8N,R3E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
WINE RED QUARRY (NEWBERRY RED QUARRY)	NE4,SE4,SEC4,T8N,R3E,SBB	SAN BERNARDINO	QUARRY	INTERMITTENT
ATCKJON PIT (ASHLAND GRANITE QUARRY)	SW4,SW4,NE4,SEC30,T12S,R2W,SBB	SAN DIEGO	OPEN PIT	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
BEELER CANYON PIT (PADRE TRANSIT-MIX POWAY PLANT)	PADRE TRANSIT-MIX, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BEYER PIT	NELSON AND SLOAN	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
BEYER PIT	H.G. FENTON MATERIAL COMPANY	SAND AND GRAVEL (P.C.C.)	
BONSALL PIT	GORDON'S SAND AND GRAVEL	SAND AND GRAVEL (P.C.C.)	
BORDER HIGHLANDS PIT (BORDER PIT)	NELSON AND SLOAN	SAND AND GRAVEL (FILL)	
BROWN TRUCKING DG PIT	BROWN TRUCKING	DECOMPOSED GRANITE	
CARROLL CANYON PIT	H.G. FENTON MATERIAL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
CARROLL CANYON PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
COAST SAND PIT	COAST SAND COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (FILL)
CONTINENTAL GRANITE PIT (HARMONY GROVE PIT)	ASHLAND GRANITE CORP.	DECOMPOSED GRANITE	
COTTONWOOD CREEK PIT	TTT CONCRETE, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
COTTONWOOD GOLF COURSE PIT	COTTONWOOD GOLF COURSE PARTNERSHIP	SAND AND GRAVEL (BASE)	
DALEY/FLEURET PIT	MARRON BROTHERS, INC.	SAND AND GRAVEL (P.C.C.)	
EL MONTE PIT	NELSON AND SLOAN	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
EL MONTE SAND PIT	DAVE MARTIN SUPPLIES, INC.	SAND AND GRAVEL (BASE)	
ENNIS PIT	ENNIS ENTERPRISES, INC.	SAND AND GRAVEL (BASE)	
FAUBUS PIT	LANORY, HARVEY J.	SAND AND GRAVEL (P.C.C.)	
FRIARS ROAD PIT (MISSION VALLEY PIT)	H.G. FENTON MATERIAL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GENGER PIT	HARMONY ROCK PRODUCTS	DECOMPOSED GRANITE	
HESTER'S GRANITE PIT	HESTER GRANITE COMPANY	DECOMPOSED GRANITE	
HI-HOPE RANCH PIT	TRI-CITY MATERIALS	DECOMPOSED GRANITE	
KITCHEN CREEK/18 PIT	TTT CONCRETE, INC.	SAND AND GRAVEL (P.C.C.)	
L.E. MORRISON SAND PLANT (SWEETWATER RESERVOIR DREDGE)	MORRISON, L.E.	SAND AND GRAVEL (P.C.C.)	
LAKE HOOGES PIT	STEVENS TRUCKING, INC.	SAND AND GRAVEL (FILL)	
LAKE WOHLFORO ROAD PIT (WIKOFF QUARRY)	EARTH STORE, INC.	DECOMPOSED GRANITE	
LAKESIDE PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LAKESIDE SAND PIT (EL CAJON PIT)	C.W. MCGRATH, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
LYNCH PROJECT	ROBERT L. LYNCH TRUCKING, INC.	DECOMPOSED GRANITE	

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
BEELER CANYON PIT (PADRE TRANSIT-MIX POWAY PLANT)	W2,NE4,SEC25,T14S,R2W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
BEYER PIT	SEC22,23,T18S,R2W,SBB	SAN DIEGO	OPEN PIT	INTERMITTENT
BEYER PIT	SW4,SEC22,T18S,R2W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
BONSALL PIT	S2,SEC30,T10S,R3W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
BORDER HIGHLANDS PIT (BORDER PIT)	S2,SEC3,T19S,R2W,SBB	SAN DIEGO	OPEN PIT	INTERMITTENT
BROWN TRUCKING DG PIT	SE4,SEC10,T10S,R3W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
CARROLL CANYON PIT	SEC1,2,3,T15S,R3W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
CARROLL CANYON PIT	NE4,NW4&S2,N2,SEC6,T15S,R2W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
COAST SAND PIT	SEC33,T13S,R3W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
CONTINENTAL GRANITE PIT (HARMONY GROVE PIT)	E2,SEC30,T12S,R2W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
COTTONWOOD CREEK PIT	SE4,SEC29,T16S,R5E,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
COTTONWOOD GOLF COURSE PIT	NE4,SEC31,T16S,R1E,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
DALEY/FLEURET PIT	SE4,SEC4,T11S,R4W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
EL MONTE PIT	SEC17,T15S,R1E,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
EL MONTE SAND PIT	SEC10,T15S,R1E,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
ENNIS PIT	NE4,SEC1,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	INTERMITTENT
FAUBUS PIT	SW4,SW4,SEC11,T10S,R3W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
FRIARS ROAD PIT (MISSION VALLEY PIT)	NW4,SEC18,T16S,R2W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
GENGER PIT	SE4,SEC30,T12S,R2W,SBB	SAN DIEGO	OPEN PIT/QUARRY	PRODUCING
HESTER'S GRANITE PIT	NW4,SW4,SEC21,T16S,R1E,SBB	SAN DIEGO	OPEN PIT	PRODUCING
HI-HOPE RANCH PIT	NE4,NE4,SEC2,T11S,R4W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
KITCHEN CREEK/18 PIT	SW4,SW4,SEC33,T16S,R5E,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
L.E. MORRISON SAND PLANT (SWEETWATER RESERVOIR DREDGE)	SEC10,T17S,R1W,SBB (PROJ)	SAN DIEGO	DREDGE	PRODUCING
LAKE HODGES PIT	NE4,SEC12,T13S,R2W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
LAKE WOHLFORD ROAD PIT (WIKOFF QUARRY)	SE4,SE4,SEC31,T11S,R1W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
LAKESIDE PIT	SEC13,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
LAKESIDE SAND PIT (EL CAJON PIT)	SEC18,T15S,R1E,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
LYNCH PROJECT	SE4,SEC7,T12S,R3W,SBB	SAN DIEGO	QUARRY	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
MCGRATH DG PIT #1 (JAMACHA PIT)	C.W. MCGRATH, INC.	DECOMPOSED GRANITE	
MISSION GORGE PIT	CANYON ROCK COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	
MISSION ROAD PIT (SAN LUIS REY RIVER PIT)	MARRON BROTHERS, INC.	SPECIALTY SAND (OTHER USES)	SAND AND GRAVEL (P.C.C.)
MISSION VALLEY PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
NATIONAL QUARRY	NATIONAL QUARRIES	DECOMPOSED GRANITE	DIMENSION STONE (GRANITE)
NELSON AND SLOAN PIT #12 (TRI-WAY PIT)	NELSON AND SLOAN	STONE (FILL)	
OTAY RANCH PIT	NELSON AND SLOAN	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
PALA PIT	SORRENTO READY MIX, INC.	SAND AND GRAVEL (P.C.C.)	
PALA PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
PALO VERDE LAKE PIT	J.B. UNLIMITED, INC.	SAND AND GRAVEL (BASE)	
PAUMA VALLEY PIT	PAUMA VALLEY COUNTRY CLUB	SAND AND GRAVEL (BASE)	
R.C.P. PIT #1	R.C.P. COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	
R.C.P. PIT #2	R.C.P. COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	
R.C.P. PIT #3	R.C.P. COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	
R.C.P. PIT #5	R.C.P. COMPANY, INC.	SAND AND GRAVEL (P.C.C.)	
RANCHO CORONADO NORTH PIT	BIERI-AVIS	STONE (BASE)	
ROCK MOUNTAIN QUARRY (PHASE 5 PIT, BIRCH QUARRY)	NELSON AND SLOAN	STONE (BASE)	STONE (RIP RAP)
SAN LUIS REY RIVER PIT (GIRD ROAD PIT)	MORRISON, L.E.	SAND AND GRAVEL (BASE)	
SIM J. HARRIS PIT	SIM J. HARRIS COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SLAUGHTERHOUSE CANYON PIT	ASPHALT, INC.	STONE (P.C.C.)	
SLOAN CANYON SAND PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SORRENTO SAND PIT	SORRENTO READY MIX, INC.	SPECIALTY SAND (OTHER USES)	
SOUTH COAST ASPHALT QUARRY (HAYMAR STREET QUARRY)	SOUTH COAST ASPHALT PRODUCTS COMPANY	STONE (P.C.C.)	STONE (BASE)
STEWART MINE	GEMS OF PALA, INC.	GEM MINERALS	MICA
SWEETWATER RESERVOIR SAND PIT	NELSON AND SLOAN	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SYCAMORE AVENUE QUARRY (VISTA QUARRY)	WYROC, INC.	STONE (BASE)	
TAYLOR PIT	TAYLOR TRUCKING AND MATERIALS CO.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
THING VALLEY ROAD PIT	S AND W SAND AND MATERIALS	SAND AND GRAVEL (BASE)	
TTT QUARRY (MINE #1)	TTT CONCRETE, INC.	STONE (P.C.C.)	STONE (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
MCGRATH DG PIT #1 (JAMACHA PIT)	SE4,SE4,SEC24,T16S,R1W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
MISSION GORGE PIT	SEC3,T16S,R2W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
MISSION ROAD PIT (SAN LUIS REY RIVER PIT)	NW4,NW4,SEC6,T11S,R3W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
MISSION VALLEY PIT	SEC13,T16S,R3W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
NATIONAL QUARRY	SW4,SEC10,T11S,R3W,SBB	SAN DIEGO	OPEN PIT/QUARRY	PRODUCING
NELSON AND SLOAN PIT #12 (TRI-WAY PIT)	SE4,SEC36,T14S,R1W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
OTAY RANCH PIT	SEC20,21,T18S,R1W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
PALA PIT	NE4,SEC32,T9S,R2W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
PALA PIT	NE4,SEC26,T9S,R2W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
PALO VERDE LAKE PIT	SW4,SEC35,T15S,R2E,SBB	SAN DIEGO	DREDGE	PRODUCING
PAUMA VALLEY PIT	NW4,SEC22,T10S,R1W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
R.C.P. PIT #1	SEC22,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
R.C.P. PIT #2	SEC23,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
R.C.P. PIT #3	SEC22,23,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
R.C.P. PIT #5	SEC22,T15S,R1W,SBB (PROJ)	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
RANCHO CORONADO NORTH PIT	SEC13,14,23,T12S,R3W,SBB	SAN DIEGO	QUARRY	PRODUCING
ROCK MOUNTAIN QUARRY (PHASE 5 PIT, BIRCH QUARRY)	SEC21,T18S,R1W,SBB (PROJ)	SAN DIEGO	QUARRY	PRODUCING
SAN LUIS REY RIVER PIT (GIRD ROAD PIT)	SEC9,10,15,16,T10S,R3W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
SIM J. HARRIS PIT	NW4,SEC19,T15S,R2W,SBB (PROJ)	SAN DIEGO	OPEN PIT	PRODUCING
SLAUGHTERHOUSE CANYON PIT	S2,SW4,SEC35,T14S,R1W,SBB	SAN DIEGO	QUARRY	PRODUCING
SLOAN CANYON SAND PIT	N2,S2,SEC15,T16S,R1E,SBB	SAN DIEGO	OPEN PIT	PRODUCING
SORRENTO SAND PIT	NE4,NE4,SEC30,T14S,R3W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
SOUTH COAST ASPHALT QUARRY (HAYMAR STREET QUARRY)	SEC33,T11S,R4W,SBB (PROJ)	SAN DIEGO	QUARRY	PRODUCING
STEWART MINE	NW4,SEC23,T9S,R2W,SBB	SAN DIEGO	UNDERGROUND	PRODUCING
SWEETWATER RESERVOIR SAND PIT	NW4,SW4,SEC11,T17S,R1W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
SYCAMORE AVENUE QUARRY (VISTA QUARRY)	NE4,SEC7,T12S,R3W,SBB	SAN DIEGO	QUARRY	PRODUCING
TAYLOR PIT	SW4,SEC21,T16S,R1E,SBB	SAN DIEGO	OPEN PIT	PRODUCING
THING VALLEY ROAD PIT	NE4,NE4,SEC1,T17S,R5E,SBB	SAN DIEGO	OPEN PIT	PRODUCING
TTT QUARRY (MINE #1)	SEC35,36,T14S,R1W,SBB	SAN DIEGO	QUARRY	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec. 1989)

MI NE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
TWIN OAKS QUARRY (SILBERGERGER PIT)	SOUTH COAST ASPHALT PRODUCTS COMPANY	STONE (S.B.)	STONE (RIP RAP)
U.S. SILICA PIT	U.S. SILICA OF CALIFORNIA	SPECIALTY SAND (OTHER USES)	
VANDEGRIFT BOULEVARD PIT (YASUKOCHI-SCHULTZ PIT)	SOUTH COAST ASPHALT PRODUCTS COMPANY	DECOMPOSED GRANITE	
WEIR PIT (PALA PIT)	J.W. SAND AND MATERIALS, INC.	SPECIALTY SAND (OTHER USES)	
BEE ROCK OUARRY	BLAKEMORE, F. JOHN	LIMESTONE (FOR LIME)	STONE (RIP RAP)
BUELLFLAT BAR	BUELLFLAT ROCK COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
COLSON SUMMIT OUARRY (SANTA MARIA OUARRY)	ANTOLINI AND SONS	DIMENSION STONE (SANDSTONE)	STONE (RIP RAP)
DOTY PIT	PARKS LAND & CATTLE COMPANY, INC.	SPECIALTY SAND (OTHER USES)	
EL JARO OUARRY	L.S. HAWLEY CORP.	STONE (RIP RAP)	STONE (BASE)
ELLWOOD RANCH QUARRY (ELLWOOD CANYON SANDSTONE)	SANTA BARBARA SAND AND TOPSOIL	SPECIALTY SAND (OTHER USES)	STONE (S.B.), SANDSTONE
FOX ROCK BAR	PINE CANYON ROCK, INC.	SAND AND GRAVEL (BASE)	SAND AND GRAVEL (S.B.)
GARDNER PIT (BUELLTON SITE)	GRANITE CONSTRUCTION COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GUADALUPE SAND PIT	GORDON SAND COMPANY	SPECIALTY SAND (OTHER USES)	SAND AND GRAVEL (S.B.)
LAS CRUCES OUARRY	ANTOLINI AND SONS	DIMENSION STONE (SANDSTONE)	DECORATIVE ROCK (SANDSTONE)
LIVE OAK SHALE OUARRY	LIVE OAK RANCH	STONE (BASE)	STONE (S.B.), SHALE
LOMPOC QUARRY	MANVILLE PRODUCTS COMPANY	DIATOMITE	
MIGUELITO CANYON OUARRY	HOLMDAHL, DEWAYNE	STONE (BASE)	STONE (S.B.), MIOCENE SANDSTONE
MIGUELITO QUARRY (TOLBERT MINE)	GREFCO, INC.	DIATOMITE	
PALOS COLORADOS OUARRY (DIBBLEE MINE)	GREFCO, INC.	DIATOMITE	
SISQUOC GRAVEL PIT (SISOUOC PLANT)	KAISER SAND AND GRAVEL COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SISOUOC RANCH PIT (GAREY ROCK PLANT)	COAST ROCK PRODUCTS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SISOUOC RIVER BAR	COAST ROCK PRODUCTS, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SOLVANG SAND PIT (CHRISTENSEN'S SAND PIT)	SOLVANG SAND	SAND AND GRAVEL (S.B.)	SAND AND GRAVEL (FILL)
TEPUSQUET CANYON OUARRY	ANTOLINI AND SONS	DIMENSION STONE (SANDSTONE)	DECORATIVE ROCK (SANDSTONE)
VENTUCOPA PIT	TAFT READY MIX	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

from California Division of Mines and Geology database (Dec. 1989)

MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
TWIN OAKS QUARRY (SILBERGERGER PIT)	NW4,NW4,SEC14,T11S,R3W,SBB	SAN DIEGO	QUARRY	PRODUCING
U.S. SILICA PIT	SEC20,T11S,R4W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
VANDEGRIFT BOULEVARD PIT (YASUKOCHI-SCHULTZ PIT)	NW4,SEC27,T10S,R4W,SBB	SAN DIEGO	OPEN PIT	PRODUCING
WEIR PIT (PALA PIT)	NE4,SEC1,T10S,R3W,SBB	SAN DIEGO	GRAVEL BAR SKIMMING	PRODUCING
BEE ROCK QUARRY	SEC31,T6N,29W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
BUELLFLAT BAR	SE4,SE4,SEC17,T6N,R31W,SBB	SANTA BARBARA	GRAVEL BAR SKIMMING	PRODUCING
COLSON SUMMIT QUARRY (SANTA MARIA QUARRY)	UNDETERMINED	SANTA BARBARA	QUARRY	PRODUCING
DOTY PIT	NE4,SEC1,T4N,R30W,SBB (PROJ)	SANTA BARBARA	OPEN PIT	PRODUCING
EL JARO QUARRY	SEC28,T6N,R33W,SBB	SANTA BARBARA	QUARRY	PRODUCING
ELLWOOD RANCH QUARRY (ELLWOOD CANYON SANDSTONE)	SEC2,T4N,R29W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
FOX ROCK BAR	SEC18,T12N,R32W,SBB	SANTA BARBARA	GRAVEL BAR SKIMMING	INTERMITTENT
GARDNER PIT (BUELLTON SITE)	SEC18,T6N,R31W,SBB	SANTA BARBARA	GRAVEL BAR SKIMMING	PRODUCING
GUADALUPE SAND PIT	SEC10,T10N,R36W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING
LAS CRUCES QUARRY	SE4,SE4,SEC5,T5N,R33W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
LIVE OAK SHALE QUARRY	SEC18,T6N,R31W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
LOMPOC QUARRY	SEC14,T6N,R34W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING
MIGUELITO CANYON QUARRY	SEC7,T6N,R34W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
MIGUELITO QUARRY (TOLBERT MINE)	SEC16,T6N,R33W,SBB	SANTA BARBARA	QUARRY	PRODUCING
PALOS COLORADOS QUARRY (DIBBLEE MINE)	SEC27,T6N,R33W,SBB	SANTA BARBARA	QUARRY	PRODUCING
SISQUOC GRAVEL PIT (SISQUOC PLANT)	SW4,SEC17,T9N,R32W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING
SISQUOC RANCH PIT (GAREY ROCK PLANT)	NE4,SEC16,T9N,R32W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING
SISQUOC RIVER BAR	NE4,SEC16,T9N,R32W,SBB	SANTA BARBARA	GRAVEL BAR SKIMMING	INTERMITTENT
SOLVANG SAND PIT (CHRISTENSEN'S SAND PIT)	SEC21,T7N,R31W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING
TEPUSQUET CANYON QUARRY	SEC15,T10N,R32W,SBB	SANTA BARBARA	QUARRY	INTERMITTENT
VENTUCOPA PIT	SEC32,T9N,R24W,SBB	SANTA BARBARA	OPEN PIT	PRODUCING

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)
from California Division of Mines and Geology database (Dec.1989)

MINE NAME(alt)	COMPANY	PRIMARY PRODUCT	COPRODUCT
BLUE STAR PIT	BLUE STAR READY MIX, INC.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
EL RIO PIT	SOUTHERN PACIFIC MILLING COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
EL RIO PIT (SANTA CLARA RIVER PIT)	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
EL RIO PIT #2	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
GRIMES CANYON QUARRY	BEST ROCK PRODUCTS	DECORATIVE ROCK (NDN-SPECIFIED)	
MARY SMITH QUARRY	SANDERS, A.J.	STONE (BASE)	STONE (S.B.)
MOORPARK PIT	BEST ROCK PRODUCTS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
OAK RIDGE PIT	QUALITY ROCK PRODUCTS	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
OAK RIDGE PIT	SOMIS ROCK AND SAND COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
RIDGELIGHT PIT	PACIFIC LIGHTWEIGHT PRODUCTS COMPANY	CLAY (BENTONITE)	SHALE (FOR AGGREGATE)
SANTA CLARA RIVER PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SANTA PAULA PIT (SANTA CLARA RIVER PIT)	GRANITE CONSTRUCTION COMPANY	SAND AND GRAVEL (P.C.C.)	
SANTA PAULA PIT (SANTA CLARA RIVER PIT)	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SANTA PAULA PIT	SOUTHERN PACIFIC MILLING COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SATICOY PIT (SANTA CLARA RIVER PIT)	SOUTHERN PACIFIC MILLING COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (S.B.)
SATICOY PIT	CALMAT COMPANY (AGGREGATE DIVISION)	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)
SCHMIDT OJAI QUARRY	SCHMIDT CONSTRUCTION COMPANY, INC.	STONE (BASE)	STONE (RIP RAP)
SESPE CREEK PIT	SESPE ROCK PRODUCTS, INC.	SAND AND GRAVEL (P.C.C.)	
TAPO CANYON PIT	C.Z.S. CDRP.	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (S.B.)
TAPO CANYON QUARRY	TAPO ROCK AND SAND COMPANY, INC.	SAND AND GRAVEL (BASE)	
VENTURA RIVER PIT	SOUTHERN PACIFIC MILLING COMPANY	SAND AND GRAVEL (P.C.C.)	SAND AND GRAVEL (BASE)

ACTIVE MINES OF SOUTHERN CALIFORNIA (1988-1989)

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MINE NAME(alt)	SECTION, TOWNSHIP, RANGE	COUNTY	TYPE OF MINE	MINE STATUS
BLUE STAR PIT	SEC8,9,16,17,21,T3N,R19W,SBB	VENTURA	OPEN PIT	PRODUCING
EL RIO PIT	SEC15,16,T2N,R22W,SBB	VENTURA	OPEN PIT	PRODUCING
EL RIO PIT (SANTA CLARA RIVER PIT)	SEC13,14,T2N,R22W,SBB (PROJ)	VENTURA	OPEN PIT	PRODUCING
EL RIO PIT #2	SEC12,T2N,R22W,SBB (PROJ)	VENTURA	OPEN PIT	PRODUCING
GRIMES CANYON QUARRY	NW4,SEC18,T3N,R19W,SBB	VENTURA	QUARRY	PRODUCING
MARY SMITH QUARRY	SEC8,9,17,T1N,R20W,SBB	VENTURA	QUARRY	PRODUCING
MOORPARK PIT	SW4,SEC18,T3N,R19W,SBB	VENTURA	OPEN PIT	PRODUCING
OAK RIDGE PIT	S2,SEC17,SE4,SEC17,T3N,R19W,SBB	VENTURA	OPEN PIT	PRODUCING
OAK RIDGE PIT	E2,SEC22,T3N,R20W,SBB	VENTURA	OPEN PIT	PRODUCING
RIDGELOUGH PIT	N2,S2,&S2,N2,SEC19,T8N,R20W,SBB	VENTURA	OPEN PIT	PRODUCING
SANTA CLARA RIVER PIT	SEC21,28,T3N,R21W,SBB (PROJ)	VENTURA	OPEN PIT	PRODUCING
SANTA PAULA PIT (SANTA CLARA RIVER PIT)	SEC12,T3N,R21S,SBB	VENTURA	OPEN PIT	PRODUCING
SANTA PAULA PIT (SANTA CLARA RIVER PIT)	SEC29,T3N,R21W,SBB (PROJ)	VENTURA	OPEN PIT	PRODUCING
SANTA PAULA PIT	SEC15,22,T3N,R21W,SBB	VENTURA	OPEN PIT	PRODUCING
SATICOY PIT (SANTA CLARA RIVER PIT)	SEC.31,32,T3N,R21W,SBB	VENTURA	GRAVEL BAR SKIMMING	PRODUCING
SATICOY PIT	SEC13,22,T2N,R33W,SBB (PROJ)	VENTURA	OPEN PIT	PRODUCING
SCHMIDT QJAI QUARRY	SE4,NE4,SEC29,T5N,R23W,SBB	VENTURA	QUARRY	PRODUCING
SESPE CREEK PIT	SEC25,T4N,R19W,SBB	VENTURA	OPEN PIT	PRODUCING
TAPO CANYON PIT	SEC24,T3N,R18W,SBB	VENTURA	OPEN PIT	PRODUCING
TAPO CANYON QUARRY	W2,NW4,SEC19,T3N,R17W,SBB	VENTURA	UNDETERMINED	PRODUCING
VENTURA RIVER PIT	SEC32,T3N,R23W,SBB	VENTURA	OPEN PIT	PRODUCING

IMPERIAL COUNTY

PRODUCT	Number of Mines
GOLD (LODE)	4
GYPSUM	2
SAND AND GRAVEL (BASE)	9
SAND AND GRAVEL (P.C.C.)	6
STONE (FILL)	1

INYO COUNTY

PRODUCT	Number of Mines
BORATES	1
CINDERS (BASE)	1
CLAY (BENTONITE)	1
GOLD (LODE)	3
LIMESTONE (OTHER USES)	1
PERLITE	1
PUMICE	3
SAND AND GRAVEL (BASE)	2
SAND AND GRAVEL (P.C.C.)	1
SODIUM COMPOUNDS	1
TALC	2
TUNGSTEN	1
WOLLASTONITE	1
ZEOLITES	1

KERN COUNTY

PRODUCT	Number of Mines
BORATES	1
CLAY (FIRE)	1
DECORATIVE ROCK	2
DIMENSION STONE (SCHIST)	1
GOLD (LODE)	4
GOLD (PLACER)	2
GYPSUM	1
LIMESTONE (FOR CEMENT)	5
PUMICE	1
SAND AND GRAVEL (BASE)	9
SAND AND GRAVEL (FILL)	1
SAND AND GRAVEL (P.C.C.)	14
SAND AND GRAVEL (SUBBASE)	1
SHALE (AGGREGATE)	2
SHALE (FOR CEMENT)	1
SHALE (LIGHT AGGREGATE)	1
SHALE (SPECIALTY USES)	3
SILICA	1
SPECIALTY SAND (OTHER USES)	2
STONE (BASE)	3
STONE (SUBBASE)	3

COPRODUCT	Number of Mines
NONE LISTED	11
SAND AND GRAVEL (BASE)	5
SAND AND GRAVEL (SUBBASE)	2
SILVER (LODE)	4

COPRODUCT	Number of Mines
NONE LISTED	14
DECORATIVE ROCK (CINDERS)	1
MOLYBDENUM	1
SAND AND GRAVEL (BASE)	1
SILVER (LODE)	3

COPRODUCT	Number of Mines
NONE LISTED	34
CLAY (BENTONITE)	1
CLAY (KAOLIN)	1
DIATOMITE	2
SAND AND GRAVEL (BASE)	11
SAND AND GRAVEL (SUBBASE)	1
SHALE (FOR CEMENT)	2
SHALE (LIGHT AGGREGATE)	1
SILVER (LODE)	4
STONE (SUBBASE)	2

LOS ANGELES COUNTY

PRODUCT	Number of Mines
CLAY (COMMON)	2
DECORATIVE ROCK	1
DIMENSION STONE	1
GEM MINERALS	1
SAND AND GRAVEL (BASE)	3
SAND AND GRAVEL (FILL)	1
SAND AND GRAVEL (P.C.C.)	20
STONE (P.C.C.)	1
STONE (RIP RAP)	2
TUNGSTEN	1

COPRODUCT	Number of Mines
NONE LISTED	9
CLAY (FIRE)	1
SAND AND GRAVEL (BASE)	18
SERICITE	1
STONE (BASE)	1
STONE (RIP RAP)	2
STONE (SUBBASE)	1

ORANGE COUNTY

PRODUCT	Number of Mines
CLAY (COMMON)	1
CLAY (KAOLIN)	1
CLAY (OTHER USES)	1
SAND AND GRAVEL (P.C.C.)	3
SPECIALTY SAND (OTHER USES)	1
STONE, DECOMPOSED GRANITE	1
STONE (P.C.C.)	1
STONE (SUBBASE)	1

COPRODUCT	Number of Mines
NONE LISTED	4
CLAY (KAOLIN)	1
SAND AND GRAVEL (BASE)	3
STONE (BASE)	1
STONE (FILL)	1

RIVERSIDE COUNTY

PRODUCT	Number of Mines
CLAY (COMMON)	3
CLAY (FIRE)	2
CLAY (KAOLIN)	3
CLAY (OTHER USES)	1
DECOMPOSED GRANITE	1
DECOMPOSED GRANITE (FILL)	1
DECORATIVE ROCK	2
DECORATIVE ROCK (GRANULES)	1
GOLD (LODE)	1
SAND AND GRAVEL (BASE)	8
SAND AND GRAVEL (P.C.C.)	24
SPECIALTY SAND (OTHER USES)	4
STONE (BASE)	6
STONE (P.C.C.)	3
STONE (RIP RAP)	3
STONE (SUBBASE)	2

COPRODUCT	Number of Mines
NONE LISTED	32
CLAY	1
CLAY (COMMON)	1
CLAY (FIRE)	1
CLAY (KAOLIN)	1
CLAY (OTHER USES)	1
DIMENSION STONE	1
SAND AND GRAVEL (BASE)	16
SAND AND GRAVEL (FILL)	1
SAND AND GRAVEL (SUBBASE)	2
SHALE (SPECIALTY USES)	1
SILVER (LODE)	1
STONE (BASE)	4
STONE (RIP RAP)	1
STONE (SUBBASE)	1

SAN BERNARDINO COUNTY

PRODUCT	Number of Mines
CALCIUM COMPOUNDS	4
CLAY (BENTONITE)	3
CLAY (HECTORITE)	1
CLAY (KAOLIN)	1
DECOMPOSED GRANITE	1
DECORATIVE ROCK (CARBONATE)	2
DECORATIVE ROCK (GRANITE)	4
DECORATIVE ROCK (VOLCANIC)	11
DIMENSION STONE (GRANITE)	1
FELDSPAR	2
GOLD (LODE)	5
GYPSUM	1
IRON ORE	1
IRON ORE (FOR CEMENT)	1
LIMESTONE (FOR CEMENT)	11
LIMESTONE (OTHER USES)	2
RARE EARTH ELEMENTS	1
SALT	4
SAND AND GRAVEL (BASE)	7
SAND AND GRAVEL (P.C.C.)	23
SHALE (FOR CEMENT)	2
SILICA	1
SILICA (QUARTZITE)	1
SODIUM COMPOUNDS	1
SPECIALTY SAND (OTHER USES)	1
STONE (BALLAST)	2
STONE (BASE)	1
STONE (SUBBASE)	1

COPRODUCT	Number of Mines
NONE LISTED	30
BARITE	1
BORATES	1
CLAY (BALL)	1
CLAY (BENTONITE)	1
DECORATIVE ROCK	1
LIMESTONE (FOR LIME)	1
SALT	1
SAND AND GRAVEL (BASE)	23
SAND AND GRAVEL (SUBBASE)	6
SILICA	1
SILVER	2
SILVER (LODE)	3
SODIUM COMPOUNDS	3
STONE (BASE)	19
STONE (FILL)	1
STONE (SUBBASE)	1

SAN DIEGO COUNTY

PRODUCT	Number of Mines
DECOMPOSED GRANITE	11
GEM MINERALS	1
SAND AND GRAVEL (BASE)	7
SAND AND GRAVEL (FILL)	2
SAND AND GRAVEL (P.C.C.)	29
SPECIALTY SAND (OTHER USES)	4
STONE (BASE)	3
STONE (FILL)	1
STONE (P.C.C.)	3
STONE (SUBBASE)	1

COPRODUCT	Number of Mines
NONE LISTED	38
DIMENSION STONE (GRANITE)	1
MICA	1
SAND AND GRAVEL (BASE)	16
SAND AND GRAVEL (FILL)	1
SAND AND GRAVEL (P.C.C.)	1
STONE (BASE)	2
STONE (RIP RAP)	2

SANTA BARBARA COUNTY

PRODUCT	Number of Mines
DIATOMITE	3
DIMENSION STONE (SANDSTONE)	3
LIMESTONE (FOR LIME)	1
SAND AND GRAVEL (BASE)	1
SAND AND GRAVEL (P.C.C.)	6
SAND AND GRAVEL (SUBBASE)	1
SPECIALTY SAND (OTHER USES)	3
STONE (BASE)	2
STONE (RIP RAP)	1

COPRODUCT	Number of Mines
NONE LISTED	4
DECORATIVE ROCK (SANDSTONE)	2
SAND AND GRAVEL (BASE)	6
SAND AND GRAVEL (FILL)	1
SAND AND GRAVEL (SUBBASE)	2
STONE (BASE)	1
STONE (RIP RAP)	2
STONE (SUBBASE), MIOCENE SS	1
STONE (SUBBASE), SANDSTONE	1
STONE (SUBBASE), SHALE	1

VENTURA COUNTY

PRODUCT	Number of Mines
CLAY (BENTONITE)	1
DECORATIVE ROCK	1
SAND AND GRAVEL (BASE)	1
SAND AND GRAVEL (P.C.C.)	16
STONE (BASE)	2

COPRODUCT	Number of Mines
NONE LISTED	4
SAND AND GRAVEL (BASE)	12
SAND AND GRAVEL (SUBBASE)	2
SHALE (FOR AGGREGATE)	1
STONE (RIP RAP)	1
STONE (SUBBASE)	1

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